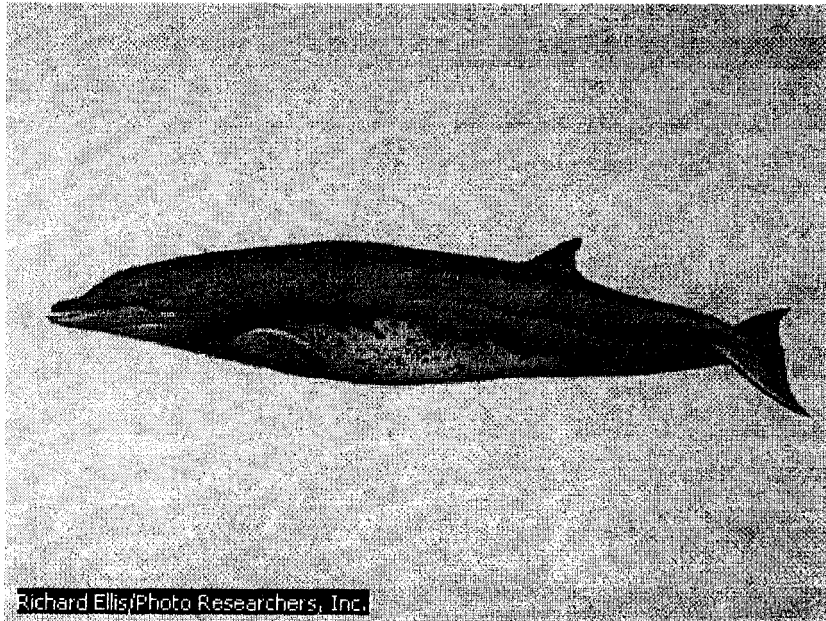


Comments of Lanny Sinkin on

National Marine Fisheries Service Proposed Rule
Docket No. 990927266-0240-02
I.D. 072699A

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental
To Navy Operations of Surveillance Towed Array Sensor System
Low Frequency Active Sonar

May 31, 2001



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To Navy Operations of Surveillance Towed Array Sensor System
Low Frequency Active Sonar

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The following comments address the National Marine Fisheries Service (NMFS) proposed rule for a five-year deployment of the U.S. Navy's Surveillance Towed Array Sensor System Low Frequency Active Sonar (SURTASS LFA).

The attorney preparing these comments represented various individuals and organizations in prior litigation related to SURTASS LFA. Hawai'i County Green Party v. William Jefferson Clinton et al., No. CV98-00232 (ACK); Kanoa Inc. dba Body Glove Cruises v. William Jefferson Clinton, et al., No. CV98-00250 (DAE); and Hawai'i County Green Party et al. v. William Clinton Jefferson, et al., CV. No. 00-00166 (ACK-BMK). These comments incorporate by reference all pleadings, including and not limited to briefs and exhibits, found in those lawsuits. As a party to those lawsuits, NMFS has direct access to the entire file in those cases.

The author also prepared various comments on the Draft Overseas Environmental Impact Statement/Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar. Those comments are found in the Final Overseas Environmental Impact Statement/Environmental impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar, Volume 2 at pages E-234, E-3 13, E-35 1, and F-46. Rather than repeat all those comments, the author invites NMFS to review those comments and the Navy responses.

These comments are submitted on behalf of various individuals and organizations contemplating further litigation.

These comments incorporate by reference all other comments filed in this docket.'

1 .O Introduction

This docket is a relatively unusual docket for NMFS because the major federal action is proposed by a military agency for a war fighting purpose. The national security establishment rarely considers protection of the environment as within their responsibilities during time of threat or war. Their mission is to locate and destroy "enemies" and their support systems.

¹ Knowing that the National Marine Fisheries Service would limit comments in the public hearings held on the proposed rule to 5 minutes, the author of these comments prepared numerous short comments for volunteers to read. Those comments are, in many instances, incorporated verbatim into these comprehensive comments.

NMFS is being asked to apply environmental laws possibly impeding or terminating a program deemed by the military to be critical to national security. Until such time as national security is defined to include a healthy and vital environment, people outside the national security establishment will continue to face the false dichotomy of national security versus environmental protection.

The planned deployment Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar is an excellent example of a narrow-minded, national security pursuit of a militarily-defined goal that failed to recognize, ignored, or deliberately avoided the environmental implications of the proposed action. In this case, that narrow-mindedness is particularly serious because the proposed action has potential environmental impacts detrimental to numerous species and entire ecosystems. The need to apply environmental laws to such a proposal is apparent.

"Secretary of State Colin Powell has begun enunciating a theory of American exceptionalism that pretty much says the United States can do as it pleases. It is so superior to other nations that it need not be bound by the rules of international behavior that bind other nations." Editorial in Minneapolis Star Tribune republished in Hawaii Tribune-Herald on February 13, 2001.

This observation about U.S. foreign policy can, in the case of SURTASS LFA deployment, also be made about the U.S. Navy's attitude towards domestic laws that apply to national security undertakings. The history of SURTASS LFA and the Final Overseas Environmental Impact Statement and Environmental Impact Statement for SURTASS LFA (OEIS/EIS) demonstrate that the Navy assumes itself to be above the law.

Based on the performance of the NMFS related to SURTASS LFA and documents regarding NMFS involvement in the development of SURTASS LFA, there is every reason to believe that NMFS will approve the Navy's application for a Letter of Authorization (LOA) to deploy this technology,

At the same time, NMFS demonstrated commendable regulatory action by denying the Navy's request to conduct the low frequency active sonar testing known as LWAD-002.

These comments are submitted to provide NMFS with support for a decision to withdraw the proposed rule and reject the Navy application in this docket.

Should NMFS fail to take those actions, these comments will be part of the record available to the courts and Congress.

2.0 1980-1996: The Outlaw Years

In 1980, the Navy identified new, more silent submarines as a potential threat. The Navy believed that existing passive listening devices deployed in the oceans would not detect these submarines. In response to this perceived threat, the Navy identified a new detection system as a priority and began to evaluate various technological replacements for the existing passive systems.

The Navy's examination of alternatives to existing detection methods did not take place in the context of preparing an environmental impact statement. Instead, the Navy simply did an internal evaluation of other technologies and selected low frequency active sonar (LFAS) as the detection method to be pursued. The Navy decided to do research and pursue a deployable system at the same time. OEIS/EIS at 1-9.

The development of a deployable system constituted a major federal action triggering the requirements of the National Environmental Policy Act (NEPA). The intent to deploy this technology in 80% of the Earth's oceans meant this action had major potential environmental impacts. The moment that the Navy decided to develop a deployable LFAS system, NEPA required the Navy to prepare an environmental impact statement.

In violation of NEPA, the Navy did not prepare an EIS in the period between the early 1980s and January 1999.

There is also the possibility that the Navy actually deployed the SURTASS LFA system for use during the Cold War. On the Space and Naval Warfare Systems Command (SPAWAR) web site, there is a paper apparently stating that the Navy successfully located Soviet nuclear submarines using the SURTASS LFA system. <http://www.spawar.navy.mil>. In the SPAWAR report, the following paragraph on "Undersea Surveillance" appears:

SSC San Diego has been a leader in the development of fixed, deployable, and mobile surveillance capabilities to detect and track submarines. During the Cold War, the Center focused those efforts on specific targets - Soviet nuclear submarines operating in deep water - achieving success with such systems as the Surveillance Towed Array Sensor System /Low Frequency Active, Sound Surveillance System, and Fixed Distributed System. Our current challenge is to develop similar capabilities to track diesel-electric submarines operating in the littoral areas - a quieter platform operating in a much more complex sonar environment. "

From SPAWAR web site, briefing 2000 document titled SSC San Diego TD3 105, September 2000.

In addition to required compliance with NEPA, an activity that will result in a "take," as that term is defined in the Marine Mammal Protection Act (MMPA), requires NMFS authorization under the MMPA. That authorization will only be given if the activity will have no more than a negligible impact on the affected stock. The authorization of such a take involves the NMFS issuing regulations that require the least practicable adverse impact on the species, stock, or habitat affected. Of particular importance is the minimizing of impacts on critical areas, such as breeding grounds. Once the regulations are completed, the NMFS issues Letters of Authorization for the activity.

The issuance of regulations and Letters of Authorization under MMPA constitute major federal actions requiring the preparation of documentation under NEPA for impacted domestic areas and Executive Order 12 114 for overseas areas.

The Navy did not initiate preparation of an EIS until August, 1996. The Navy did not apply for Letters of Authorization related to the deployment of SURTASS LFA until August 1999.

A third law applicable to SURTASS LFA is the Endangered Species Act. A "take" under that act requires formal consultation with NMFS to ensure that the planned activity will not endanger the continued existence of the effected species.

The OEIS/EIS states that such consultation began in August 1999. OEIS/EIS at I- 17. There is conflicting evidence suggesting consultation actually began in May 1998. See Letter from Hilda Diaz-Soltero to Mr. Joseph Johnson dated January 27, 1999, which

states "On May 18, 1998, the Space and Naval Warfare Systems Command (SPAWAR), U.S. Navy, requested consultation with the National Marine Fisheries Service (NMFS), under Section 7 of the Endangered Species Act (ESA), for the proposed operational deployment of the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA)." OEIS/EIS Appendix A, Correspondence.

Regardless of which date is correct, the Navy did not initiate formal consultations with NMFS until at least a decade **after** the decision to develop a deployable system.

In the period from the mid-1980s to the **mid-1990s**, the Navy designed, engineered, manufactured, and conducted extensive sea tests of the SURTASS LFA system. Estimates of expenditures during those years are in the range of \$100 million.

The Navy did not claim to be exempt from **environmental** laws based on the national security nature of their program. Instead, the Navy conducted the testing of the system in foreign waters and took the legally untenable position that U.S. environmental laws; including **NEPA**, **MMPA**, and **ESA**; did not apply to such testing within the Exclusive Economic Zone (EEZ) of foreign nations. U.S. environmental laws do apply within the EEZ of foreign nations with the exception of the waters within the territorial, three-mile limits of a foreign coast. The Navy's claim to be exempt from law that did apply is found in the environmental reviews prepared for those tests and submitted to NMFS.

The author of these comments raised this issue in comments filed on the draft OEIS/EIS. OEIS/EIS, Volume 2 at E-365, Comment Section 4.6. In the notation placed on that comment, the OEIS/EIS identifies its response to this issue in Response 6-1.2. In that response, the Navy states that the OEIS/EIS does include the EEZ of foreign nations, where species listed under the ESA are potentially found. OEIS/EIS at 10-167. The Navy apparently now acknowledges that the EEZ of foreign nations does fall within U.S. environmental laws. This acknowledgement amounts to an admission that the Navy illegally avoided such laws while using SURTASS LFA prior to the preparation of the OEIS/EIS. The Navy offers no explanation for its earlier illegal assertion.

In 1995, the Natural Resources Defense Council (NRDC) discovered the SURTASS LFA program and sent the Navy a letter threatening suit, if the Navy persisted in avoiding applicable laws. The Navy responded by initiating the processes required by law, including the Notice of Intent to prepare an OEIS/EIS published in August 1996.

This history of the outlaw years is relevant to the NMFS decision on whether to grant the Navy's application for a Letter of Authorization.

By the time the Navy completed the OEIS/EIS, the SURTASS LFA investment stood at approximately \$350 million. The incentive to avoid negative findings regarding environmental impacts of deployment is obvious. Close scrutiny of the OEIS/EIS is required to determine whether this document was prepared in order to justify a deployment decision already made and to avoid writing off a huge investment.

A second consideration is whether to allow the Navy to proceed with numerous unanswered questions regarding environmental impacts. The Navy admits that "[d]ata regarding underwater hearing capabilities of marine mammals are rare and limited to a few of the smaller species that make convenient subjects in captivity."² OEIS/EIS at I-19. The OEIS/EIS goes on to state that "[t]hese data gaps have necessitated the use of

² Referring to captive marine mammals subjected to acoustic testing that sometimes verges on barbaric as "convenient subjects" reveals much about the authors of the OEIS/EIS.

various models and extrapolations in order to provide a rational basis for the assessment of potential risk from exposure to LF sounds.” *Ibid.* at 1-20.

The OEIS/EIS admits that the process taking place since the 1980s involved the “[d]esign and development of a deployable LFAA system.” OEIS/EIS at 1-9. The rationale for pursuing this goal prior to resolving the scientific feasibility of such a system was the perceived urgent national security need.

Assuming only for the sake of argument that the urgency rationale was reasonable in the 1980s, then the decision to pursue both the research and the preparation of a deployable system simultaneously meant that the legal requirement to prepare an EIS applied in the 1980s.³ With no data available in the 1980s on the potential environmental impact of such a new system, the assumption had to be that there would be such impacts and an EIS should be prepared.

Starting the formal environmental assessment very late in the process, the Navy conducted minimal research and now attempts to extrapolate that minimal research into a comprehensive position on ocean-wide and world-wide environmental impacts. The Navy claims that the limited SRP resulted from “time and funding constraints” OEIS/EIS at 4.2-27. These constraints are self-imposed by the Navy’s decision not to begin conducting such research until SURTASS LFA was on the verge of deployment.

Had the Navy initiated a comprehensive NEPA process beginning in the 1980s, there would have been ample time to conduct research into many of the gaps in scientific knowledge that exist today. The Navy and others are currently funding such research, so filling additional gaps is neither infeasible nor cost-prohibitive. NEPA § 1502.22.

Thus, we have a situation in which the Navy illegally evaded the application of environmental laws and consequently failed to identify and research critical environmental impact questions.

NMFS must decide how to respond to the Navy’s decision to evade environmental laws and the consequent failure to conduct essential research.

For NMFS to permit the Navy to proceed to deployment in the absence of adequate scientific research into the environmental effects would be to reward the Navy for its illegal actions.

Given that NMFS was aware that the Navy had refused to prepare an EIS in at least the first ten years of SURTASS LFA development, NMFS has an even greater obligation to now fulfill its legal responsibility to ensure marine life is protected by decisions based on adequate scientific research. NMFS can fulfill this responsibility by concluding, at a minimum, that the scientific uncertainties are too great to permit an informed regulatory decision and, therefore, NMFS is foreclosed from granting the Navy application.

A third reason that the past history of illegal activity is relevant to NMFS decision-making is the NMS knowledge about and acquiescence to the illegal activity. During the years of illegal development and testing, NMFS received notice from the Navy of these activities and made no effort to compel the Navy to comply with environmental laws. The key person involved was Kenneth Hollingshead. Mr. Hollingshead permitted the testing to take place without an EIS, Letters of Authorization,

³ The OEIS/EIS now states that a serious and competent challenge from silent submarines will not materialize until 2035. OEIS/EIS at I-35.

or formal consultations with NMFS based on environmental assessments that incorrectly claimed exemptions from the applicable laws.

In the comment period on the proposed NMFS rule, Mr. Hollingshead served as the hearing officer presiding over public hearings. None of the key NMFS personnel, other than Mr. Hollingshead, attended the public hearings, even the hearing held in Silver Spring, Maryland where NMFS headquarters are located. Mr. Hollingshead presumably has a key role in reporting on those hearings to NMFS decision-makers.

The NMFS complicity in Navy illegality and the central role of Mr. Hollingshead in both that illegality and the public hearings is only **some** of the evidence that NMFS has a conflict of interest in this docket. This conflict requires NMFS to pursue a **decision-making** process that is transparent, objective, and above reproach in all aspects.

At the public hearing in Honolulu, I suggested that NMFS assign two people to assemble and argue the case against granting the Navy's application. That suggestion specifically excluded as advocates for denial any personnel with a history of involvement in the Navy's early violations or in the Navy's belated EIS process, such as Mr. Hollingshead and Mr. Roger Gentry. The case made by such advocates should be part of the public record of the decision in this matter.

The Navy's history of illegality also illuminates the need to restore constitutional balance to the entire process. The Navy assumed it was above the law. The federal regulatory agency responsible for enforcing the law acquiesced in that assumption. To restore civilian control and a constitutional balance, the federal regulatory agency must reassert its independent authority to determine and **enforce** compliance with the law. Given its own history, NMFS has the burden of proof to demonstrate that its decision is not continuing a subordination of NMFS to the Navy that amounts to regulatory nonfeasance.

3.0 The Final Environmental Impact Statement

The adequacy of the OEIS/EIS is critical to the NMFS decision. If the inadequacies of the OEIS/EIS are significant, NMFS cannot rely upon that document for its decision-making. As will be presented in these comments, the OEIS/EIS is a seriously flawed document giving all the appearance of an ex post facto attempt to justify the hundreds of millions of dollars the Navy invested in deployment of this technology before paying adequate attention to the environmental impacts.

3.1 The Scope of the OEIS/EIS: Failure to Consider Threat or Warfare Conditions

The proposed action by the Navy is employment of the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar. OEIS/EIS at 1- 1. The term "employment" in this case "means the use of SURTASS LFA sonar during routine training and testing as well as the use of this svstem during military onerations." *Id.* (emphasis added).

Yet, in preparing the OEIS/EIS, the Navy specifically excluded any evaluation of environmental impacts from the use of LFA in times of threat or warfare. When a comment questions why the EIS/OEIS does not **evaluate** environmental impact during threat and warfare conditions, the Navy's response is simply that the scope of the document does not include such conditions. OEIS/EIS, Comment 1- 1.9 at 10-41. That response is a non-answer to the question, i.e. the EIS/OEIS does not include such conditions because it does not include such conditions.

One aspect of this exclusion is an apparent assertion that, in time of threat or warfare, destruction of the environment is little more than acceptable collateral damage. Whatever needs to be done to win the war or defeat the enemy is permissible, however destructive the actions taken are to the Earth.

By adopting that attitude, the Navy denies itself one major benefit of a comprehensive environmental impact statement. Such a document presents the decision-maker with an opportunity to modify the proposed action or redirect resources to an alternative action, if either the identified impacts are too severe or the mitigation measures necessary to minimize the impacts are too burdensome or impractical.

Without a comprehensive presentation of the potential impacts, such an opportunity is lost.

The Navy acknowledges that the LFA system is being deployed as a war-fighting technology and is intended for use during threat and warfare conditions. A reasonable expectation is that such use will be wherever and however the Navy wishes during those conditions and that those uses will far exceed the use during routine deployment.

The Navy states: "All proposed SURTASS LFA sonar operations (including testing) would be in accordance with the mitigation measures under Alternative 1," i.e. limitations on decibel levels near shorelines and recreational diving areas and restrictions in Offshore Biologically Important Areas. OEIS/EIS, Comment 2-2.3 at 10-52 (emphasis added). This statement implies that the Navy intends to observe all mitigation measures during all operations, including threat or warfare conditions.

This implication is obviously not true. For example, the OEIS/EIS also states that the restricted areas will not affect SURTASS LFA "use of the system during military operations." Ibid., Comment 2-2.1 at 10-51. Extensive geographic restrictions on LFA use are not examined in the OEIS/EIS as an alternative because such limitations would foreclose fulfilling the warfighting purpose during which the Navy has no intention of being limited by environmental concerns, Ibid. at 2-24.

The exclusion of any analysis of impacts from using SURTASS LFA during threat and warfare conditions is a major omission that denies decision-makers in the Navy and other agencies, such as NMFS, a real basis for reaching conclusions about environmental impacts.

The National Environmental Policy Act defines the purpose of the EIS as providing decision-makers with all the information necessary to decide whether to risk the environmental harms that could be inflicted. NMFS can decline to make a determination on deployment until such time as the Navy evaluates the full range of impacts, including impacts during threat and warfare conditions. Such a position would be consistent with NMFS' statutory responsibilities.

3.2 Procedural Violations of NEPA

Court rulings over the years have severely restricted judicial authority to use NEPA to protect the environment. Instead, NEPA has been reduced to an almost purely procedural statute. If the agency follows the procedures in preparing its environmental analysis, the agency can ultimately do almost anything.

The procedural requirements of NEPA remain as a requirement imposed upon any federal agency proposing to take a major action.

3.2.1 No Detailed Statement of Irreversible and Irretrievable Commitments of Resources

In the Comment and Response section of the proposed rule, NMFS states that NMFS will fulfill its responsibilities under the National Environmental Policy Act and decide on whether to issue the requested take authorization by adopting the Navy's final environmental impact statement in whole or in part as NMFS own document. Federal Register, Vol. 66, No. 53/ Monday March 19, 2001/Proposed Rule at 15375 (hereinafter "Comment Response"), Comment Response 44.

NMFS states: "NMFS provided guidance to the U.S. Navy on the OEIS/EIS preparation so that the document would satisfy both agency's NEPA responsibilities." Comment Response 45.

The adequacy of the OEIS/EIS is, therefore, critical to the NMFS decision. Any inadequacies in that document reflect on the rigorousness of the NMFS guidance provided to the Navy.

NMFS is well aware of the NEPA requirements for an OEIS/EIS and that Section 102(c)(v) of those requirements mandates the inclusion in the OEIS/EIS of a detailed statement of irreversible and irretrievable commitments of resources involved in the proposed action. 42 U.S.C. § 4332(C)(v).

The OEIS/EIS addresses this requirement on page 9- 1. You do not have to be a lawyer to understand that the one paragraph found on that page is not a detailed statement and does not even come close to satisfying the NEPA requirements.

Furthermore, the one paragraph tries to characterize the NEPA requirement as limited to nonrenewable resources that would be consumed by the project. That characterization is patent nonsense, as NMFS well knows. The requirement is to provide a detailed explanation of all resources needed to implement the planned action.

With the Navy having spent at least \$350 million to date, there is obviously a long list of commitments omitted from the EIS. The Navy has built only one ship of the four planned for full deployment. That ship cost at least \$60 million. There are obviously major future commitments necessary to achieve the proposed full deployment.

Because the Navy clearly violated one of the five NEPA requirements, the OEIS/EIS does not satisfy the Navy's NEPA responsibilities. 42 U.S.C. § 433 1(C).

NMFS can avoid this obvious conclusion by taking a narrow view that only those parts of the OEIS/EIS pertaining to marine life are within the purview of NMFS. Or NMFS can treat this obvious deficiency as one of many indicators that the Navy has not prepared an adequate OEIS/EIS and decline to issue any letters of authorization or permits until such time as the Navy achieves compliance with NEPA.

In addition, the OEIS/EIS admits that the Navy spent \$350 million prior to completion of the document. OEIS/EIS, Comment 1-3.5 at 10-43, 44. The Navy argues that 'the monies expended on the SURTASS LFA sonar program do not bind the Navy to deploy the SURTASS LFA sonar as proposed.' *Ibid.* at 10-44.

The question before NMFS is not whether the expenditures "bind" the Navy to deployment. The question is whether the massive expenditures to date call into question the objectivity of the OEIS/EIS. The development phase of SURTASS LFA included "extensive design and testing to optimize the system's ability to meet its operational requirements." OEIS/EIS, Comment 2-1. 15 at 10-51. In other words, the Navy conducted extensive preparation for actual deployment of the system prior to preparing

an EIS in violation of NEPA. The resources expended in that preparation and in construction of SURTASS LFA systems, the ship to carry the system, etc. violated the NEPA provision. 42 U.S.C. § 4332(C)(v)

If evidence appears that indicates the OEIS/EIS is less than objective, NMFS can take notice of the irreversible and irretrievable commitment of hundreds of millions of dollars as a possible motive for bias in the OEIS/EIS.

3.2.2 Inadequate Consideration of Alternatives

Under NEPA, the Navy also has an obligation to evaluate alternatives to the proposed action. 42 U.S.C. § 4332(C)(iii). The historical record demonstrates that the Navy conducted an evaluation of alternative technologies to LFA in the mid-1980s outside the context of preparing an EIS. This record also reveals a Navy assumption that there would be no major improvements in passive technology and, therefore, LFA was the only possible technology to meet the perceived threat.

When the Navy finally agreed to obey the law and prepare an EIS, the only alternatives considered were deployment of LFA without restrictions, deployment with some restrictions, and no deployment at all. In other words, the Navy's EIS process did not consider alternatives to low frequency active sonar that might achieve the same purpose with less impact on the environment.

This omission by the Navy is another obvious violation of NEPA.

When a comment to the draft OEIS/EIS raises the question about the availability of advanced passive detection systems, the Navy's response is that such systems are beyond the scope of the OEIS/EIS. Comment 1-2.1 at 10-41. That response is another non-response, i.e. the OEIS/EIS does not consider the passive alternative because it does not consider that alternative.

At the same time, the Navy does discuss the passive acoustic alternative only long enough to dismiss the technology as incapable of detecting beyond short range. Comment 1-2.3 at 10-42.

Passive sensor systems worked very well during the European Cold War.⁴ OEIS/EIS at 1-7. Recent "quieting" technological advances have degraded their effectiveness. Id.

Navy R&D programs also considered improvement of passive sonar systems for long range detection. However, even with incremental technological changes, the Navy recognized that its passive sonars would not be sufficient to maintain or exceed the needed long-range detection advantage. Ibid. at 1-8.

There is no report on this research in the EIS. The alternatives discussed are "non-acoustic" and Table 1-1 does not include passive sonar systems. Ibid. at 1-8 – 1-10.

This combination of refusing to include passive sonar within the scope of the EIS/OEIS and then dismissing such sonar as ineffective avoids any truly substantive discussion of the alternative while still attempting to eliminate a possible alternative that NEPA would require be evaluated.

⁴ As opposed to the Asian Cold War that the Bush Administration is now working hard to create. "And then there's China – a major unofficial target of the whole Star Wars II enterprise, and leading candidate for Cold War II. which hopeful ideologues are penciling in for later in this decade." *It's still a MAD nuclear world out there* by Michael Kinscy published in the Honolulu Advertiser. May 5, 2001 at p. A5.

NMFS takes the position that such passive systems are "an entirely different system that is not under consideration for takings under this proposed rule."

The NMFS and Navy responses avoid both NEPA and MMPA obligations. If there is an alternative that does not require any takings, surely NMFS is obligated to explore that alternative in detail. For example, the MMPA, 16 U.S.C. § 1374(c)(3)(B), prohibits issuance of a permit for scientific research that authorizes lethal taking of marine life "unless the applicant demonstrates that a nonlethal method of conducting the research is not feasible." A similar requirement should be imposed in this docket. The applicant should be required to demonstrate that there is no alternative technology capable of achieving the same purpose that does not also post a threat of disrupting biologically important behaviors, inflicting injury, or lethal taking.

In the early public period (post-1995) of SURTASS LFA presentations, the Navy put forth the primary purpose of SURTASS LFA as detection of silent submarines in the littoral (near shore) environment. For example, in an environmental assessment prepared by NMFS and based on information provided by the Navy, the SURTASS LFA program is described as follows:

Through the mid- 1980s the United States Navy enjoyed a clear advantage over the Soviet Navy in Anti-Submarine Warfare (ASW), the detection, tracking and engaging of submarines. This superiority rested on the acoustic advantage enjoyed by the U.S. Navy's passive detection systems over the relatively noisy Soviet submarine fleet. More modern Soviet submarines becoming operation in the later 1980s, however, were significantly quieter than their predecessors, and foreshadowed a quantum jump in submarine quieting technology. Improvements in detection capabilities had to be made. Various programs aimed at these improvements had been underway to investigate ASW technologies – key among which was low frequency active (LFA) – that did not rely exclusively on passive detection.

In the early 1990s geopolitical realignments worldwide introduced yet another area of concern for the U.S. Navy and ASW forces – the quiet diesel submarine operating generally in the littoral waters of Third World countries. These realignments caused a shift in the U.S. national maritime strategy toward littoral warfare and placed emphasis on requirements of operating the Navy in shallow water environments. Accordingly, the Navy adjusted its development efforts toward an examination of the littoral ocean areas of the world in which low frequency active acoustic systems might be used to support Navy operations in the near-shore environment. These areas are not limited to the physically shallow regions that approach the limits of achievable: submerged submarine operations, but include deep water regions where LFA system might be used to support projection of sea power into a coastal region.

Environmental Assessment for Low Frequency Sound Scientific Program in the Southern California Bight, September/October 1997, the National Marine Fisheries Service, Office of Protected Resources at 2.

In preparing the OEIS/EIS, however, the Navy changed the purpose to be meeting the "U.S. need for improved capability to detect quieter and harder-to-find foreign submarines at long range." OEIS/EIS at 1-2. The OEIS/EIS now claims that

development of low frequency active sonar took place to meet this long-range detection challenge. Id.

In spite of the change portrayed in the OEIS/EIS, at least some elements within the military still believe that the "current anti-submarine warfare focus is in the coastal environment ." Speech by Dr. Thomas Green, DARPATech 2000 Symposium, September 6-8, 2000 (posted at http://www.arpa.mil/darpatech2000/Presentations/ato_pdf/speeches/Green.pdf)

The coastal environment is a more difficult environment for detecting silent submarines because there are repeated interactions of acoustic energy with the bottom sediment, more noise from shipping traffic, and other sources of interference. Id., see also SPAWAR Report, supra. (littoral areas are more complex sonar environments). In the deeper water environment, sound is more likely to travel longer distances with "little attenuation or bottom interference." Id.; Dr. Green, supra.

In the deeper water environment, arrays of acoustic hydrophones can be used to provide improved sensitivity to the signal over a single hydrophone and to enable directional discrimination.

Coherently processing acoustic array data to provide directional sensitivity is known as beam forming.

For the deep-water problem, conventional beam forming applied to a linear array of hydrophones is an effective means of processing acoustic array data to localize sound sources in bearing. However, the conventional beam former is not well matched to the complex multi-path environment typical of the littoral, since a single sound source can actually appear to arrive on many conventionally formed beams.

Id.

In other words, detecting silent submarines is more difficult in littoral areas. To address the problem of silent submarines in the littoral environment, the Defense Advanced Research Projects Agency (DARPA) is developing Robust Passive Sonar (RPS). Based on preliminary work, the RPS system under development now is capable of "providing a revolutionary new capability for tactical sensors" by using sophisticated algorithms to isolate and detect the sound of a silent submarine. Id.; see also http://www.arpa.mil/ATO/programs/rp_sonar.htm.

The Robust Passive Sonar (RPS) program goal is to increase significantly the performance of sonar systems by canceling out surface shipping noise, which is the primary cause of interference. The RPS program accomplishes this precision cancellation by innovative and optimal processing techniques coupled with multi-dimensional receive arrays and other external information. The expected net system performance gain is 10 to 20 decibels, and the system is expected to dictate future array and acoustic sensor field designs. Last year, the program completed the investigation of the feasibility of RPS processing and array concepts. In FY 2000, the program is beginning development of the space-time processing algorithms to reject interference, and, next year, the program will conduct data collection exercises and a preliminary performance assessment.

Statement by Frank Fernandez, Director, Defense Advanced Research Projects Agency before the Subcommittee on Emerging Threats and Capabilities Committee on Armed

Services, United States Senate on March 21, 2000 (posted at <http://www.arpa.mil/body/NewsItems/FernandezStatement32100.html>).⁵

I direct your attention to the Statement of RADM Malcolm I Fages, US Navy Director, Submarine Warfare Division, Office of the Chief of Naval Operations, and RADM JP Davis, US Navy Program Executive Office for Submarines, before the House Armed Services Committee Military Procurement Subcommittee on Submarine Force Structure and Modernization 27 June 2000. In that statement, Admiral Fages said:

“Surveillance Towed Array Sensor System (SURTASS) Twin Line operations in 1998 and 1999 demonstrated the ability to detect advanced diesel submarines at substantial ranges in the littoral environment where contact was previously thought to be ‘unobtainable’ by the operational commander.”

Admiral Fages further stated:

“Development of the new Advanced Deployable System (ADS) will provide a rapidly deployable acoustic array installed on the ocean floor that provides littoral undersea wide-area surveillance and real time cueing. ADS development is moving along smoothly with potential for accelerated capability development.”

High ranking Navy officers have testified before Congress that the advanced passive systems are capable of detecting the newer quiet submarines in the coastal environment and at substantial range.

It appears that the challenge of new silent submarines in the littoral environment has been or is about to be solved with passive devices. That leaves SURTASS LFA as a technology without a mission. Perhaps this change explains the change in the SURTASS LFA mission into a deep water, open ocean mission. That change misdirects attention away from the progress in meeting the littoral challenge.

As major advancements in detection of silent submarines in littoral environments are now taking place and as such detection is far more difficult than deeper water detection, there is every reason to assume that passive devices are available to meet the supposed purpose of SURTASS LFA as set forth in the OEIS/EIS. This development leaves SURTASS LFA as a technology in search of a mission, rather than a national security necessity.

NMFS can take official notice of that testimony and require the Navy to provide a more adequate presentation on alternatives in the FEIS.

If there is an alternative technology that reduces the taking to zero, then that technology reduces the taking to the lowest level practicable and should be required under the MMPA. Comment Response 22.

Once again, NMFS can take a very narrow view of its responsibilities under NEPA and refuse to consider the adequacy of the Navy’s treatment of alternatives or

⁵ The technique discussed in the DARPA research involves matched-field processing. DARPA is reporting major advances in this technique. In a recent publication of the U.S. Navy’s Office of Naval Research, the following appears:

New projects in the following areas will not be funded:

- Traditional, computationally inefficient “matched field” processing techniques that require large parameter space searches

http://www.onr.navy.mil/sci_tech/ocean/onrpgahh.htm

This exclusion may or may not be relevant to the continued development of the Robust Passive Sonar.

NMFS can evaluate the adequacy of the OEIS/EIS as a whole and its compliance with NEPA.

In this instance, the NEPA requirement to evaluate alternatives is directly related to the protection of marine mammals. NMFS is warranted in rejecting the Navy's application until such time as there is a comprehensive discussion of alternatives to deployment of LFA that includes alternatives achieving the same purpose with lesser or even negligible environmental impacts.

3.3. Inadequate Research

To a great extent, the OEIS/EIS is only as adequate as the research underlying the document.

3.3.1 Adequacy and Objectivity of Previous Research

There are at least five concerns regarding the adequacy and objectivity of the research relied upon by the Navy to support deployment of SURTASS LFA.

The first is the large data gaps that exist. On the issue of auditory responses of marine mammals and other marine life to LFA or any other sound, there are essentially more gaps than data. See e.g. SACLANTCEN Bioacoustics Panel, La Spezia, Italy, 15-17 June 1998 at 2-66, 67.

Second, the Navy attempts to replace a larger body of research with the very limited research conducted by the Low Frequency Sonar Scientific Research Program (LFS SRP). See e.g. OEIS/EIS at 4.2-2, 4.2-25.

Third, the conditions in the ocean are undergoing significant, and even radical, change. The Earth's environment is under extraordinary stress from human activity. The oceans are no exception. Fisheries are collapsing from excessive harvesting. Ecosystems are collapsing from pollution, Global warming is changing the oceans and threatening the food chain. None of these stresses are considered in the EIS for deployment of SURTASS LFA. To the contrary, the absence of any consideration implicitly implies that the oceans are as vital and healthy as they have been in the not too distant past. Assuming a steady state condition, rather than an increasingly stressed condition, for the ocean environment fails to provide a comprehensive context for environmental analysis.

There is also the environmental damage being inflicted on land by overpopulation and other factors. As the impacts of environmental degradation increase on land, those impacts can be expected to spill over into the oceans. "At Mayor Jeremy Harris' second Mayor's Asia-Pacific Environmental Summit yesterday, one leader after another confessed to struggling to reverse environmental collapse." *Environmental concerns span Asia-Pacific region*, Honolulu Advertiser, May 5, 2001 at p. B 1.

Fourth, the Navy has a vested interest in supplanting research that does not support deployment because the Navy invested more than \$350 million in preparing to deploy SURTASS LFA. As a United States Senator observed: "[T]he U.S. Navy has spent more than \$300 million to develop [SURTASS LFA] since 1989. So this is far more than a casual interest to the U.S. Navy." Letter dated May 7, 2001 from Senator Daniel Inouye to Mr. Lanny Sinkin.

Fifth, much of the available funding to conduct research in this area comes from the Navy, calling into question the independence of researchers seeking such funding. "The increasing reliance of the U.S. marine mammal research community on U.S. Navy funding appears to be effectively restricting academic freedom." Marine Mammal

Science, the U.S. Navy, and Academic Freedom by Hal Whitehead and Linda Weilgart, *Marine Mammal Science*, 11(2):260-263 (April 1995) at 260.

3.3.2 Adequacy and Objectivity of Research Associated Directly with OEIS/EIS

The adequacy of a research effort can often be evaluated as much by what is not studied as by what is studied.

3.3.2.1 Ain't Gonna Study War

As noted above, the OEIS/EIS is limited to conditions of routine deployment and excludes conditions of threat and warfare. Section 3.1 *supra*. The OEIS/EIS research effort does not make any effort to simulate, model, or assess use of SURTASS LFA in threat and warfare conditions.

3.3.2.2 Four is not the Multitude

The Navy's scientific research program attempts to use a very limited study of four whale species to determine the impact of SURTASS LFA on all whales and all marine mammals. Such a broad reach from such a tiny foundation is tilled with opportunities for error.

There are whale species that are still being discovered. OEIS/EIS at 3.2-5 (exact number of beaked whale species is unknown). There is no basis for assuming that the four selected species are representative of these newly discovered species.

The Navy has essentially taken a snap shot of a leaf and extrapolated from that picture to describe the entire forest.

Even that snap shot is incomplete because the analysis of the LFS SRP results is still being done. So a better analogy would be the Navy tries to extrapolate from a partially developed snap shot of a leaf to describe an entire forest.

3.3.2.3 Beaked Whales: The Canary in the Ocean

As far as what is visible, the greatest visible impact of active sonar to date fell on the beaked whales. Their bodies littered the coastline of Greece in 1996. More bodies ended up on the beaches of the Bahamas in 2000. Other deaths are probably attributable to naval activity, as documented in a report titled "Historical Mass Mortalities of Ziphiids" issued on April 6, 2000, the Marine Mammal Program of the National Museum of Natural History at the Smithsonian Institution.

The Scientific Research Program conducted as part of the Navy's EIS process did not include the beaked whale. Other species were assumed to be more sound sensitive.

The FEIS states on page 1-20 that "[d]eep diving species such as sperm and beaked whales are presumed to not have LF hearing as good as that of baleen whales. Therefore, all of these groups or species were considered to be at lower risk from LF sound than baleen whales."

Yet the OEIS/EIS acknowledges on page 3.2-44 that for Cuvier's beaked whales - the species stranding in the Mediterranean during LFA testing -- "[n]o sound or hearing data are available." With no data available, how can the Navy make any assumptions regarding the relative sensitivity of the beaked whales as compared to other whales?

At the same time, the OEIS/EIS discussion of the Bahamas incident states that even if the investigation of that incident concludes that beaked whales are more sensitive to sound than other whales, that conclusion should be limited to the mid-range sonar used in the Bahamas. OEIS/EIS at 3.2-37. A conclusion that beaked whales are more sensitive to mid-range sonar "would not appear to present any significant new

information relevant to the proposed deployment of SURTASS LFA sonar.” Id.

“[T]here is little evidence that [beaked whales] are more sensitive to LFA sounds than the species selected as subjects for the LFS SRP.” Id.

This reasoning is upside down. Beaked whales are a species for which there is very limited evidence available as to the sounds they make or their hearing sensitivity. The Bahamas incident (and other incidents) appear to demonstrate that this species is more sensitive to certain frequencies of sound than assumed initially and more sensitive than the species studied in the LFS SRP. The conservative assumption would be that this species might also be more sensitive to low frequency sounds and that the newly developed evidence is highly relevant to the assessment of potential environmental impacts.

In fact, in a February 23, 2001 letter to Joe Johnson, Program Manager for the SURTASS LFA OEIS/EIS, marine biologist Ken Balcomb noted that the NATO and U.S. Naval Undersea Warfare Center study of the Mediterranean strandings of beaked whales found the resonance frequency of airspaces in Cuvier’s beaked whales (*Ziphius cavirostris*) to be about 290 Hz at 500 meters depth or almost precisely the middle frequency of LFA (100-500 Hz). Letter from Ken Balcomb to Joe Johnson dated February 23, 2001 placed in the record of the NMFS public hearing in this docket held on April 28, 2001 in Honolulu, Hawaii. This calculation would lead an objective person to the opposite conclusion from that of the Navy, i.e. the deaths in the Bahamas and the resonance frequency of beaked whale airspaces lead to a conclusion that beaked whales are likely to be sensitive to low frequency sonar.

The assumption of greater sensitivity on the part of beaked whales seems reasonable. Deep diving species operate in a more silent environment. An ability to hear a wider range of sounds and to amplify any sounds heard would seem more necessary to adapt to such an environment.

The OEIS/EIS contains no discussion of the possibility that intrusion of LFA into the beaked whales’ silent environment could cause a panic response.

The need to equalize pressures within various body systems while engaging in deep dives and surfacing would suggest that deep divers experience a wider range of resonance frequency possibilities, depending on the depth at which they encounter the sound.

The beaked whales are the proverbial canary in the coalmine. To ignore their dead bodies is to turn a blind eye to the truth.

3.3.2.4 Resonance: The Unexplored Frontier

The FEIS has little to say about resonance. In response to a comment on the possibility of resonance effects, the FEIS, on page 1 O-96, Comment 4-4.15, provides a single paragraph.

This paragraph does acknowledge that airspaces can be induced to resonate in response to underwater sounds of appropriate wavelength and that such resonating can increase the probability of tissue damage. The paragraph dismisses the likelihood of such effects by claiming that the SURTASS LFA signal remains at one frequency for ten seconds or less out of a total signal duration of 100 seconds.

This response provides no justification for assuming that a ten second exposure of critical tissues to a broadcast at the resonance frequency will not cause damage.

In his letter to the Navy, marine biologist Ken Balcomb stated:

I conclude that the whales in the Bahamas incident were adversely and lethally impacted by sonar pings at received levels well below the 180 dB re 1 µPa considered safe for whales, and this was due to the aforementioned resonance problem. These pings were of much shorter duration (1/10th second) than the proposed LFA pings, I might add.

If a ping of 1/10 second duration can set up a lethal resonance in the tissue of marine mammals, a ten second LFA ping has a greater potential for inflicting such damage.

The OEIS/EIS discusses potential resonance impacts on fish, OEIS/EIS at 4.1-4, and sharks, Ibid. at 4.1-8. When the discussion turns to impacts on marine mammals, however, the OEIS/EIS jumps right into the LFS SRP and modeling, with an exclusive focus on the sound pressure levels such mammals might receive. The failure of the OEIS/EIS to devote extensive discussion to potential resonance impacts is a major inadequacy in this document.

There is already evidence strongly suggesting that low frequency sonar broadcasts kill whales with a resonance effect.

In his letter to Joe Johnson, Ken Balcomb states:

I wondered about tissue damage caused by resonance, and I specifically asked what the Navy calculations for lung resonance frequencies of a beaked whale were at various depths. [You sidestepped my question by responding generically to my comment with response 4-4.15]. Subsequent to my asking you about specific resonant frequencies and depths, I found that in 1998 NATO and the US Naval Undersea Warfare Center had already calculated the resonance frequency of airspaces in Cuvier beaked whales (*Ziphius cavirostris*) to be about 290 Hz at 500 meters depth (page H2, SACLANTCEN M-133) which is almost precisely the middle frequency of LFA (100-500 Hz) described in your OEIS/EIS! That information is quite important, with specific reference to Technical Report 3 of your DOEIS/EIS, wherein there are several citations of Navy sponsored studies that clearly demonstrated vestibular dysfunction (eg. dizziness, vertigo) and lung hemorrhage, etc. in laboratory animals exposed to LFA at their lung resonance frequency. In other words, the Navy has sufficient information available to know there is at least theoretically a very serious problem to whales from LFA for even brief periods of time.

The Marine Mammal Protection Act includes a requirement that all takings be "humane," which means involving "the least possible degree of pain and suffering practicable to the mammal involved." 16 U.S.C. § 1362(4). The shredding of internal tissues critical to hearing and/or navigation resulting in stranding and death hardly fits that definition.

In a recent paper, the Navy essentially takes the position that resonance is not possible as a result of a SURTASS LFA broadcast. Appendix B, Information Paper – SURTASS LFA Sonar, Office of the Assistant Secretary of the Navy (Installation & Environment), an undated document distributed by Senator Daniel Inouye accompanying a letter dated May 17, 2001 (hereinafter "Information Paper") at 6. The paper states that "ongoing research by Dr. [Darlene] Ketten of the Woods Hole Oceanographic Institution, a leading researcher on the marine mammal acoustics, indicates the resonance phenomenon is not an issue for SURTASS LFA sonar." Id.

This position stands in stark contrast to the SACLANTCEN calculation on beaked whale resonance noted in the quotation above **from** Ken Balcomb's letter.

Also, Dr. Ketten is part of the team investigating the Bahamian killings in March 2000. NMFS personnel are also involved in that investigation. The investigative team issued a one year report on March 15, 2001 stating **that** it is "highly likely" that Navy sonar-s are linked to these killings. NOAA Fisheries Status Report on the One Year Anniversary of the Stranding of Beaked Whales in the Bahamas.

While the sonars implicated in the Bahamian event are mid-range sonars, the investigative methodology would be the same if SURTASS LFA was the suspected cause. The investigation of what killed the whales in the Bahamas involves "experiments on three aspects of the sonar signal." Information Paper, supra. Those aspects are "frequency (or pitch, which involves the measure of head resonance), ping repetition rate (which involves complex modeling combined with studies of the recovery rate of the inner ear of cadavers), and received level, or 'loudness' at the whale." Id. (emphasis added).

These aspects are aspects of every sonar signal. Resonance is associated with frequency. Low frequency sound can cause resonance of tissues that resonate at those particular frequencies. For the Assistant Secretary of the Navy to take the position that SURTASS LFA cannot cause resonance is a measure of the strain caused by the truth emerging about this technology.

3.3.2.5 Don't Ask, Don't Tell

The LFS SRP is remarkable for what it did not include.

Dolphins produce and hear low frequency sounds. OEIS/EIS, Table 3.2-4 at 3.2-38 – 3.2-40. Spotted dolphins, present in Hawaiian waters, both produce and hear such sounds. Ibid at 3.2-39. Studies of dolphin response to LF sound is considered relevant for extrapolation to other species. Ibid. at 1-27.

Yet the LFA SRP did not consider potential impacts on Hawaiian dolphins. The SRP made no effort to establish any baseline data for Hawaiian dolphins nor to monitor any possible responses to the SURTASS LFA broadcasts.

Now the NMFS has to deal with the evidence presented on the record in Honolulu that dolphin pods off the west coast of Hawaii experienced dramatically fewer births in the season following the use of SURTASS LFA than in the following seasons. Testimony of Steve Soto-Amundson, NMFS Hearing, Honolulu, April 28, 2001. This record is based on daily observation of the pods documented on a publicly accessible web site.

The possibility exists that dolphin fetuses are sensitive to LF sound, that the physical mother-fetus relationship can be disrupted by LF sound, and/or that both the fetus and the relationship can be disrupted by resonance from SURTASS LFA broadcasts.

Because the Navy overlooked or ignored the dolphins, the Navy did not establish any baseline data for Hawaiian dolphin pods prior to testing, did not monitor dolphin responses during the testing, and did not conduct any follow up research to determine possible longer term impacts on dolphins from the testing. In the absence of such an effort, the Navy cannot refute the data. The only option for the Navy is to criticize the

study, so we can expect arguments that the study **was** not scientific enough to **satisfy** the Navy.⁶

Will NMFS allow the Navy to avoid asking the necessary questions and, thereby, avoid having to tell the answer? Will NMFS attempt to dismiss the importance of the dolphin research in order to protect the Navy? Or will NMFS find this research disturbing and compelling? Lots of people are staying tuned to find out.

3.3.2.6 Ignoring the Fish

The potential impacts on fish discussed in the OEIS/EIS are limited by both the research available and the limited scope of discussion. OEIS/EIS at 4.1-4 – 4.1-8.

As in many areas of concern raised by the proposed deployment, the data gaps on fish are bigger than the data base. The Navy failure to conduct any original research into the impacts of LFA on fish over the fifteen-year development period for a deployable SURTASS LFA system is a reason to deny the application.

While the Navy spent significant funds to conduct its minimal research into SURTASS LFA impacts on four mysticete species, the OEIS/EIS relies entirely on a literature search for determining impacts on fish. That literature is very limited.

Almost all the research cited took place in confined areas, not open waters. Such research excludes the potential study of some effects, such as potential disruption of schooling. There is also no discussion regarding possible longer term development problems. The lack of open waters research means that there is no information and no discussion about potential impacts on migratory fish, such as salmon.

There is no discussion at all of potential impacts on fish eggs.

The OEIS/EIS acknowledges that “[i]t is likely, however, that many other fish species produce and/or use sound for communications, but data are not available on additional species.” OEIS/EIS at 3.2-7.

Similarly, the discussion of fish with specializations states that “only a few specialists are known to inhabit the marine environment (although lack of knowledge of specialists in the marine environment may be due more to lack of data on many marine species, rather than on the lack of their being specialists in the environment.” *Ibid.* at 3.2-11.

To compensate for the lack of research, the OEIS/EIS once again uses the 180 dB sound field to limit its discussion to potentially injurious impacts. OEIS/EIS at 4.1-6. There is no basis for assuming that the only injurious effects on fish or fish eggs will take place at 180 dB or higher.

In the discussion of behavioral changes, the research is limited to three species at levels up to 153 dB. *Id.*

To say that the OEIS/EIS discussion of fish impacts barely scratches the surface in the knowledge demonstrated and concerns examined is a generous assessment.

⁶ As to any Navy response to this testimony. NMFS is required to follow the mandates of the Administrative Procedures Act. At the NMFS Honolulu hearing on April 28, 2001, the hearing officer invited one of the scientists under contract to the Navy in the LFS SRP to present additional information about Phase III of that program. The scientist presented slides and an oral presentation. That material was not available to the public, so there was no opportunity to comment upon the presentation. Essentially, NMFS permitted the applicant's agent to supplement the OEIS/EIS without that supplemental presentation being incorporated into the required public review and comment process for such a supplement and without an opportunity to provide comments to NMFS on the presentation.

Nor can NMFS ignore the fish. While the MMPA may be specifically written to protect marine mammals, part of that protection must include protection of their food supply. Any significant impact on fish stocks would have an impact on fish eating marine mammals.

3.3.2.7 Sea Snakes: Failing to Observe the Obvious

The OEIS/EIS excludes sea snakes "because they primarily inhabit inshore waters, and there is no evidence of sensitive hearing in the LF band in these species." OEIS/EIS at 3.2-4.

The following analysis of that decision is produced solely by conducting an Internet search on sea snakes. The information developed in that search produced the substantive critique of that decision found herein.

That the EIS does not contain basic information available to anyone on the Internet is one measure of the inadequacy of the OEIS/EIS.

There are more than 50 species of marine snakes, most of which are found in the Indian and Pacific oceans. <http://www.underwater.com.au/seasnakes.html>. Marine elapids (sea snakes) are present to some extent in most tropical oceans. <http://www.thesnake.org/elapidae.html#taipan>.⁷

Sea snakes can dive to 100 meters and remain submerged for up to 2 hours. *Id.* The Yellow Bellied Sea Snake is "highly modified for life in the open Pacific Ocean" http://photo2.si.edu/different/dif_csnae.html. These snakes "spend much of their time in deep dives." *Id.*

Sea snakes have been found to form chains up to sixty miles long and floating in massive groups, <http://tor.cc/articles/snakes.htm>; <http://www.gulftel.com/~scubadoc/seasnks.htm>.

Sea snakes may mate at sea and give birth to live young. <http://www.underwater.com.au/seasnakes.html>. Such snakes avoid higher temperature water by diving to cooler water when moving through tropical seas. *Id.*

These characteristics suggest that the OEIS/EIS dismissal of sea snakes because they primarily inhabit inshore waters is inappropriate.

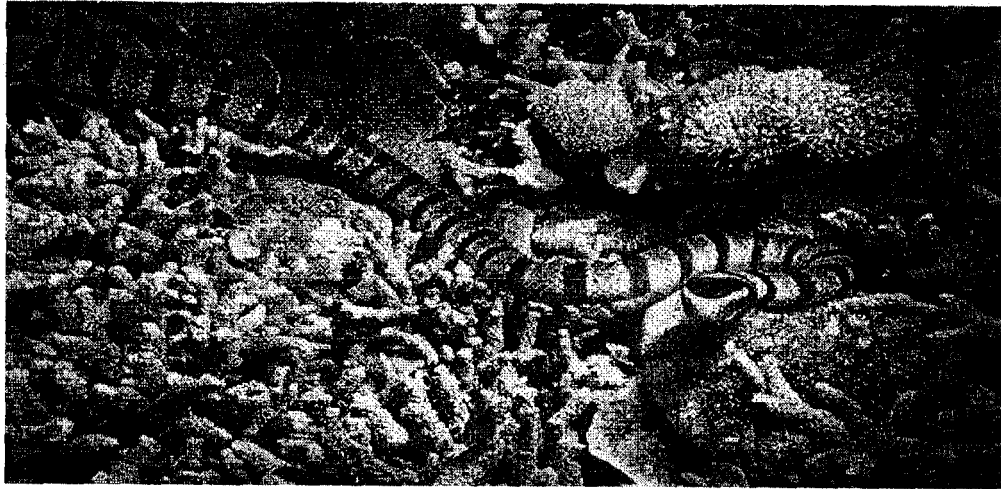
The likely use of SURTASS LFA in littoral environments in another reason such a dismissal is inappropriate. *See* Section 3.2.2, *supra*.

Furthermore, sea snakes have greatly enlarged lungs capable of storing large volumes of air. <http://www.underwater.com.au/seasnakes.html>. There is, therefore, a potential for resonance effects disrupting their behavior or causing injury.

Sea snake lungs are believed to be involved in regulating buoyancy. *Id.* Any resonance effect in the lungs could, therefore, lead to the snake surfacing. Such a response could have a biological impact because some species cannot tolerate high temperature water. *Id.* If resonance leads to the snakes surfacing into tropical water above the upper lethal limit (33-36 degrees centigrade), *id.*, there is a potential for fatal injury.

A resonance response of diving into colder water than the temperature within the tolerance level of the snake can similarly inflict injury.

⁷ Sea snakes have been seen on Maui. <http://www.kingsnake.com/forum/asia/messages/247.html>, in Florida, <http://www.kingsnake.com/forum/asia/messages/152.html>. southern Siberia to the coast of New Zealand and Tasmania, and from Cape of Good Hope to Central American Pacific waters. <http://tor.cc/articles/snakes.htm>



3.3.2.8 Sharks and Sea Turtles

The OEIWEIS treatment of sharks is another discussion based on lack of any real data and assumptions with no basis.

There are no studies of hearing injury to sharks. OEIWEIS at 4.1-8. The OEIS/EIS relies upon studies of non-specialist bony fish. Id. The available studies of such fish are very limited and the species studies are not necessarily representative. Ibid. at 4.1-1 – 4.1-5. The OEIS/EIS admits that extrapolation from bony fish to sharks is difficult and any conclusions must be provisional. Ibid. at 4.1-9.

Research shows sharks withdrawing from continuous sounds in the 96 dB to 123 dB range and from pulsed sounds greater than or equal to 111 dB. Ibid. at 4.1-9. SURTASS LFA could deliver sound at those levels to thousands of square miles of ocean.

The OEIS/EIS responds to the lack of data on shark distribution by assuming even distribution. Id. That assumption ignores the schooling of sharks in favorite feeding grounds or for other purposes.

In discussing impacts on shark migratory movements, the OEIS/EIS acknowledges that research shows that sharks appear to migrate along fixed magnetic pathways. Ibid. at 4.1-10. The OEIWEIS minimizes the impact on migration by assuming that a single broadcast from SURTASS LFA will cause only temporary divergence from the pathway. Ibid. at 4.1-11. This assumption ignores the cumulative effects of repeated signals. Multiple broadcasts repeatedly driving sharks from their migratory pathways could well disorient the sharks altogether.

The assumed lack of SURTASS LFA on sea turtles is also based on guesswork and presuming that the only real effects would take place within the 180 dB sound field. Ibid. at 4.1-12 – 4.1-15.

3.3.2.9 Long Term Monitoring: Too Little, Too Late

Rather than conduct adequate research prior to deployment, the Navy proposes to substitute its Long Term Monitoring Program. OEIS/EIS at 2-25 – 2-27. This program is little more than a continuation of the 180 dB model, i.e. the primary subject to be studied will be the impacts within the 180 dB isopleth. Id.

In addition, the Navy claims that it will provide an “[a]ssessment of any long-term ecological processes that may be exhibiting effects from SURTASS LFA sonar operations, and reports or scientific papers on discernible or estimated cumulative impacts from such operations.” Id.

This claim assumes that the Navy is capable of identifying long term changes in the behavior of sea life and determining which changes are attributable to SURTASS LFA.

The difficulty of identifying long term changes argues strongly for the application of the precautionary principle to the deployment of this technology. The likelihood of long term effects that are not identified or not identified until too late to mitigate is high.

Furthermore, the Navy already takes the position that the introduction of SURTASS LFA broadcasts into the marine environment will only minimally increase the amount of noise in the ocean. OEIS/EIS at 4.4-3, 4. Taking that assumption as a starting point, the Navy is hardly likely to view any long term effects detected as attributable to SURTASS LFA.

Also, the Navy has demonstrated a propensity for requiring a “smoking gun” level of evidentiary proof before any adverse effects can be attributed to low frequency active sonar. Ibid. at 3.2-45 – 47. A classic example of this propensity appears in an opinion editorial written by Joe Johnson and published in the Honolulu Advertiser. See Appendix B (editorial and response).

In that editorial, Mr. Johnson stated:

Contrary to accusations made recently in these pages, LFA sonar has not been involved in any marine mammal strandings or injuries, and certainly not any deaths. Specifically: Allegations regarding incidents in Greece and the Bahamas implicate mid-frequency sonars and not LFA. In fact, during those periods, the only LFA sonar ship was in the Pacific Ocean conducting passive-only operations.

Appendix A.

The Grecian incident referred to is the stranding and deaths of numerous whales at the same time as a NATO sonar exercise. The NATO investigative report states that the sonars broadcasting off Greece sent out signals at 600 Hertz. Everyone - even Mr. Johnson - agrees that signals below 1000 Hertz are considered low frequency signals.

The NATO report contains extensive discussion about LFA, including one chapter provided by the U.S. Navy’s chief researcher into LFA. Obviously the Grecian killings implicate LFA. SACLANTCEN, supra. Mr. Johnson’s statement is knowingly false.

Also, in referring to the SURTASS LFA ship in the Pacific as “the only LFA sonar ship,” Mr. Johnson continues the OEIS/EIS effort to claim that SURTASS LFA cannot be compared to any other LFA source and, thereby, to claim that only effects caused directly by a SURTASS LFA system rather than any LFA source are relevant to determining the safety of SURTASS LFA. See Section 3.3.3.1., infra.

Essentially we have the Navy promising to report on long term effects that the Navy has already concluded cannot happen or, if appear to have happened, cannot be attributable to SURTASS LFA.

Given the limitations of the proposed Long Term Monitoring Program and the Navy’ pattern of denying demonstrable effects of SURTASS LFA, the Long Term

Monitoring Program cannot be accepted as a substitute for performing the research needed to fill the data chasm.

3.3.3 Risky Business: Building a Tower on a Twig

The foundation for the entire risk analysis presented in the OEIS/EIS is the Low Frequency Sonar Scientific Research Program (LFS SRP). If this research and the use of its results do not withstand scrutiny, then the entire analysis crumbles.

A close look at the SRP reveals that the OEIS/EIS environmental impacts analysis is a tower reaching up to a "minimal effects" conclusion that is built on a twig called LFS SRP.

A critical component of the OEIS/EIS are the calculations of risk. The OEIS/EIS states: "Taken together, the LFS SRP results, the acoustical modeling, and the risk assessment provide an estimate of potential environmental impacts." OEIS/EIS at 4.2-2.

The risk section of the OEIS/EIS could well have been prepared in cooperation with the Navy's cryptology department. The words used, the explanations given, the assumptions made, and the analysis presented all result in a discussion that hides the true nature of what is being done to obscure the truth.

The more the discussion of risk is examined, the more it appears that the Navy, with the cooperation of NMFS, has provided a sophisticated deception.

Once deciphered, the impacts discussion is found to contain the following elements:

- A claim that SURTASS LFA is a unique source that is used to justify ignoring evidence unfavorable to deployment and to make the SRP appear to be the only relevant and reliable data.
- A claim that the SRP achieved a statistically significant number of marine mammal exposures, when the actual exposures are very small in number.
- A claim that RLs took place over a range of received levels (RLs) during exposures that fails to consider the minimal exposures at the high end of the range and the preponderance of lower level exposures.
- A claim that exposures did not result in any biologically significant changes in behavior, when the recorded impacts more accurately support an inference that biologically significant changes in behavior did result.
- A claim that the lack of biologically significant behavior changes supports setting the risk level very low for the entire range of RLs achieved.
- A claim that 180 dB represents the onset of injury, when that level actually represents the level of practically guaranteed injury.
- A claim that RL levels causing injury are the same as RI levels causing changes in biologically important behavior.
- A claim that mitigation of effects at the guaranteed injury level mitigates all significant effects, including significant changes in biologically important behavior.
- A claim that a valid risk continuum can be created based on the earlier claim that no biologically important behavioral effects took place in the lower ranges of RLs and that the 180 dB RL is the onset of injury.
- A claim that RLs for large populations of marine animals can be credibly modeled.
- A claim that applying the risk continuum to the model of RLs gives a legitimate estimate of animals significantly affected.

Almost every element in this scheme contains either a misrepresentation, an exaggeration, a false assumption, an unsupported extrapolation, biased manipulation of data, misdirection, or other characteristic undermining the accuracy and integrity of the claim. Overall, the scheme gives the impression of an analysis determined by the desire to reach a predetermined conclusion.

A more objective reading of the same information provides support for the hypothesis that significant biological behaviors take place at **RLs** far below the level assumed in the **OEIS/EIS** and that mitigation of those impacts is probably impossible.

3.3.3.1 SURTASS LFA: Totally Unique vs. Simply Another LFA Source

As noted in Section 3.3.2.8 above, the Navy claims that SURTASS LFA is a unique source of acoustic intrusion into the marine environment, when making such a claim furthers the goal of deployment. Mr. Johnson's editorial assertion of that uniqueness is not the first time the Navy took that position.

In March 2000, the Hawai'i County Green Party filed a motion to reopen its 1998 lawsuit based, Hawaii County Green Party v. William Jefferson Clinton, et al., No. CV98-00232, on evidence that the Navy intended to resume LFA testing, contrary to the Navy's representation to the court in 1998. NMFS is a party in this litigation.

In response, the Navy filed a declaration from the program manager of LFA research stating that the research under discussion involved low frequency transducers that were not the same as SURTASS LFA and that the use of such transducers would not constitute further research into the impacts of SURTASS LFA.

The official Navy position – sometimes – is that unless the SURTASS LFA array is being used in the research, the research cannot be compared to research using SURTASS LFA.

This position throws out reliance on any previous studies to predict the impact of SURTASS LFA. According to the Navy position, the fact that SURTASS LFA is an array capable of producing very powerful sounds over a broad range of frequencies makes that this technology unique. Reaching conclusions about its ocean-wide environmental impact based on the **SRP's** brief studies of its effects at low power levels on four mysticete species is even more clearly without adequate scientific foundation.

Given the Navy position on the uniqueness of SURTASS LFA as compared to other underwater sound producers, there would seem to be even less relevance in comparing exposure impacts in air, i.e. the type of extrapolation from human studies found in the **OEIS/EIS** would seem to be irrelevant. See e.g. *ibid.* at 1-23 – 1-24.

Taken to its logical conclusion, the uniqueness argument makes all research prior to the **SRP**, other than research results incidentally gathered as part of SURTASS LFA testing, irrelevant. Such a conclusion would mean that almost all the references in the **OEIS/EIS** *ibid.* at 13-1 – 13-54, irrelevant.

At the same time, while the Navy maintained to the court that SURTASS LFA produces a unique acoustic environment, the **OEIS/EIS** clearly demonstrates reliance on research not involving SURTASS LFA. **OEIS/EIS** at 10-103, Comment 4-5.10 (the **SRP** data “combined with existing data, provide a substantial basis for informed decision-making regarding the proposed action.”)

Among the non-SURTASS LFA research treated as relevant in the **OEIS/EIS** are studies on humans exposed to non-LF sounds in open air, *ibid.* at 1-23 – 1-25, marine species other than mammals exposed to LF sources other than SURTASS LFA, *ibid.* at 1-

26, and marine mammals exposed to LF sources other than SURTASS LFA. Ibid. at 1-27.

Of course, what is really going on is that the Navy is willing to take completely contradictory positions depending on the desired result. What might be called “situation science)” comparable to situation ethics, permeates the OEIS/EIS.

In another related example of such science, the OEIS/EIS is willing to use data from ATOC to conclude that there is an absence of **responsiveness** to LF broadcasts at 120 dB RL in humpback and sperm whales. OEIS/EIS at 10-97, Comment 4-4.18.

When the question is whether ATOC broadcasts caused whale deaths, however, “ATOC and SURTASS LFA sonar have different acoustic signal patterns (different frequencies, source levels, pulse lengths, duty cycle, and waveforms) and their deployment techniques are very different (ATOC is a stationary source on the ocean floor at approximately 900 m [2,950 ft], SURTASS LFA is deployed from a moving ship at approximately 122 m [400 ft.] depth in the water column).” OEIS/EIS at 10-98, Comment 4-4.20.

Thus, ATOC is comparable to SURTASS LFA when the purpose is to prove a lack of response to a certain power level of LF broadcasts (favorable to deployment) and is not comparable at all when the suggestion is made that ATOC is responsible for whale deaths (not favorable to deployment).

If continued LFA testing might be jeopardized by a promise made to a court not to test further, then the new testing is not the same technology as SURTASS LFA.

If data is available using a source other than SURTASS LFA and that data can be massaged to support deployment, then such data is relevant. If data is available from a source other than SURTASS LFA and that data does not support deployment, then SURTASS LFA is unique and data from other sources irrelevant.

The National Marine Fisheries Service should closely examine the overreaching assumptions, contradictions, misuse of scientific evidence and other flaws in the OEIS/EIS and send the Navy back to the drawing boards.

In evaluating the adequacy of the OEIS/EIS, NMFS will have to choose between contradictory positions taken by the Navy on numerous issues, including the unique nature of SURTASS LFA. The fact that NMFS is forced into this position is sufficient to conclude that the OEIS/EIS is scientifically inadequate to support deployment and that an obvious bias toward deployment at the expense of the truth characterizes the OEIS/EIS. This conclusion warrants NMFS rejecting the Navy application.

3.3.3.2 LFS SRP: Finding Significance in the Minimal

The limitations on the scope of the LFS SRP are discussed in Sections 3.3.2.1 through 3.3.2.8 above.

Additional limitations are found in the conduct of the SRP itself. This analysis of those limitations will focus primarily on Phase III, the Hawaiian testing on humpback whales.

Given that the Navy chose to limit the SRP to the study of four indicator species, the conservative approach to evaluating environmental impacts would be to use data from the indicator species demonstrating the greatest effects at the lowest RLs. Whether the results based on humpback whale tests provides that conservative baseline is a matter for further evaluation. The data from the humpback whale tests is, however, sufficient to

demonstrate the fraudulent nature of the OEIS/EIS risk assessment and to conclude that major environmental impacts will occur, if deployment is allowed.

Normally, the first question would be whether the data from the humpback whale tests is statistically significant. The OEIS/EIS clearly accepts the results of Phase III as a basis for decision-making. The Navy is, therefore, foreclosed from now disavowing those results. Nevertheless, examining what the Navy accepted as statistically significant is one indicator of the inadequacy of the OEIS/EIS.

The OEIS/EIS relies upon “tens of experimental trials” to “reveal any response that could be construed as affecting survival or reproduction.” OEIS/EIS at 4.2-30.

Reliance on tens of trials for conclusions critical to a proposed action as significant as SURTASS LFA deployment is only part of the evidence of an inadequate OEIS/EIS.

In the Hawaiian testing, the primary measure of impacts reported was changes in humpback whale singing. The SRP achieved a total of 17 focal follows of singing whales. Technical Report #1 at 100. The researchers characterized their study as having a “very small” sample size. *Ibid.* at 103.

There is a very real question as to whether the results of this study are statistically significant. By comparison, the modeling done as part of the OEIS/EIS risk assessment process achieved what it termed “statistical significance” in one model by assuming the presence of 100 to 200 animals for a 20-day period within the sound field of transmissions every fifteen minutes. OEIS/EIS at 4.2-36. While not directly comparable to the SRP research, the requirements for statistical significance in modeling at least give a reference point for deciding whether the 17 focal follows are statistically significant.

Given the very small sample size and the mixed results reported in Technical Report #1, a reasonable conclusion would be that the tests were not statistically significant.

3.3.3.3 LFS SRP: Masking Adverse Data

The OEIS/EIS says that the range of RLs in the Hawaiian test was 120 to 150 dB. OEIS/EIS at 4.2-28.

While technically correct, the report on Phase III of the SRP states: “It proved difficult to expose animals to levels >150 dB, and few were exposed to levels >140dB.” Technical Report #1 at 10.

The actual maximum RL levels received during 17 focal follows is 7 RLs <130 dB, 5 RLs < 140 dB, 4 RLs < 150 dB, and 1 RLs at 150.5 dB. *Ibid.*, Table D-2. More than 70% of the RLs fell below 140 dB. Thus, from Phase III, there is almost no data on exposures above 150 dB and very little on exposures above 140 dB.

Furthermore, the RL at which singing stopped was almost always lower than the highest RL achieved. The Phase III report found that singing stopped at maximum RLs of 133 dB, 142.3 dB (in the one broadcast to reach 150 dB), 120.1 dB (although the observation boat may have disturbed the focal whale), 127.6 dB, an estimated maximum of 122 dB, 137.8 dB, an estimated maximum of 126 dB, 124 dB, 126.1 dB, and 103.5 dB. *Id.*

The actual range of broadcast RLs that coincided with cessation of singing was, therefore, 103.5 to 142.3 dB, a significantly lower range than 120 to 150 dB.

While in some cases the researchers attribute cessation of singing to factors other than SURTASS LFA, the fact remains that these cessations all took place at levels well below 150 dB and 70% took place below 140 dB.

3.3.3.4 LFS SRP: Imposing Insignificance

While accepting the significance of a study with questionable significance, the OEIS/EIS then minimizes the impacts demonstrated by the supposedly significant results.

The OEIS/EIS states:

These experiments [in all three phases], which exposed baleen whales to RLs ranging from 120 to 155 dB, detected only minor, short-term behavioral responses. Short-term behavioral responses do not necessarily constitute significant changes in biologically important behaviors. The fact that none of the LFS SRP observations revealed a significant change in biologically important behavior helped determine an upper bound for risk.

OEIS/EIS at 4.2-29 (emphasis added).

To avoid the implication of responses that might indicate significant change, the OEIS/EIS leaps to a conclusion that the responses affirmatively demonstrate no significant change.

Yet the OEIS/EIS still admits that “[f]urther analysis is required to establish how often male humpbacks stopped singing in the absence of SURTASS LFA sonar transmissions, and to evaluate the significance of song cessation observed during the playbacks.” *Id.*

Thus the OEIS/EIS chooses to interpret data in the light most favorable to deployment when there is evidence suggesting adverse impacts and the question is essentially unresolved.

Furthermore, the research scientists find more potential for adverse impacts than the OEIS/EIS acknowledges. In discussing the cessation of singing, the scientists state:

This [possible relation of singing to social activity] raises the possibility that exposures to low-frequency sound might disrupt behavioral interactions with singers at received levels lower than required to reliably cause singers to stop singing. While the sample sizes are very small, this possibility indicates how important it is not just to use behaviors as indicators of harassment, but rather to evaluate whether exposure may change actual rates of biologically significant behaviors such as social interactions.

Technical Report #1 at 103. In other words, an RL that interrupts singing and, therefore, a social interaction, may cause a biologically significant effect even if singing resumes shortly thereafter. What appears to be a short-term behavioral response may actually have long-term significant consequences.

The OEIS/EIS insistence that no change took place in biologically important behaviors used a blunt force approach to a complex question, when the evidence raised implications adverse to deployment. The purpose of the false characterization of the evidence is to hide those implications.

3.3.3.5 Building on Sand

The next step in this deception is to use the favorable interpretation of evidence that is adverse to set a very high threshold for adverse impacts. The SRP is used to determine an “upper bound for risk.” OEIS/EIS at 4.2-29. The OEIS/EIS treats the presumed absence of biologically significant behavior changes as taking place

in the 120 to 150 dB range. The analysis then assigns a 2.5% probability of risk at 150 dB as a supposedly conservative value. *Ibid.* at 4.3-30.

This conclusion in turn permits the analysis to minimize all risk between RLs of 120 and 150 dB. *Ibid.* at 4.3-30, Figure 4.2-2b. The potential damage from prior research indicating onset of biologically important behavior changes at 120 dB, *ibid.* at 1-29, 4.2-30, is contained by imposing a minimal risk value on higher RLs. The 70% of SRP exposures causing cessation of singing below 130 dB get transformed into a conclusion that “the risk function does not attain appreciable values until RLs (SPEs) exceed 130 dB (Figure 4.2-2b).” *Ibid.* at 4.2-30.

The assumption of the 2.5% risk probability is further called into question by the admission by that the Navy does not know the meaning of what the SRP observed. *See* Section 3.3.3.4, *supra*. (further analysis required).

3.3.3.6 Stalking the Illusive 180 dB Criterion

The next piece of the Navy’s puzzle is the use of the 180 dB RL.

The first question raised is what the level represents to the Navy.

The OEIWEIS states: “For the purposes of this document, 180-dB received level is considered as the point above which some potentially serious problems in the hearing capability of marine mammals could start to occur.” OIES/EIS at 1-28 (emphasis added).

Presumably, the assumption is that the first risk of injury through some hearing loss will occur at the 180 dB level. Also, presumably, that injury would occur to those individuals in the species most prone to such an injury based on their condition, age, history, etc.

Yet the same RL level is assigned a 95% risk factor meaning that “most individuals may be at risk.” *Ibid.* at 4.2-30.

Thus, the OEIS/EIS defines the same level as putting the most sensitive members only at risk and as putting almost all the species at risk.

The latter assumption is more congruent with the OEIS/EIS statement that “all marine mammals exposed to RLs \geq 180 dB are evaluated as if they are injured.” *Ibid.* at 4.2-20. If most members are at risk, the conservative assumption would be that all members are at risk.

This assumption creates a further difficulty in interpreting the OEIS/EIS. If most are at risk at 180 dB, then some are at risk at levels below 180 dB. Yet the OEIS/EIS assumes 180 dB to be where the potential for injury starts. *Ibid.* at 1-28.

A further examination of how the OEIWEIS uses the 180 dB assumption illuminates other serious flaws in the presentation.

3.3.3.7 Since When is Injury a Behavior?

The OEIS/EIS section titled “Definition of Biological Risk and Determination of Risk Function states: “Based on the MMPA (Subchapter 1.3.3. I), the potential for biological risk was defined as the probability for injury or behavioral harassment of marine mammals.” OEIS/EIS at 4.2-20 (emphasis added).

Subchapter 1.3.3.1 accurately states that the MMPA contains two categories of harassment. *Ibid.* at 1-16. The first is injury (Level A). *Id.* The second is disruption of important behavioral patterns. (Level B). *Id.*

The OEIS/EIS defines the potential for biological risk as “potentially caus[ing] hearing, behavioral, psychological, or physiological effects.” *Ibid.* at 4.2-20.

The OEIS/EIS then states that the analysis of biological risk assumes “all marine mammals exposed to $RLs \geq 180$ dB are evaluated as if they are injured.” *Id.*

What the OEIWEIS has done is to combine Level A and Level B harassment into one risk assessment and address mitigation of injury only. The underlying assumption must be that mitigating injury will also mitigate disruption of important behavioral patterns.

This assumption is the exact reverse of the correct assumption. Mitigation preventing disruption of behavioral patterns would significantly mitigate the potential for injury. Mitigation preventing injury takes effect long after the biological effects level is passed.

NMFS acknowledges that “behavioral modifications can be expected at lower SPLs [sound pressure levels]” than the SPL levels causing injury. Comment Response 23. Animals change biologically important behaviors, such as interrupting singing, mating, feeding, etc. at levels well below the levels that would cause physical injury.

NMFS attempts to mask what is being done by referring to the 180 dB isopleth as “an area wherein marine mammals are more likely to incur an injury, than at distances wherein the incidental taking will be limited to short-term behavioral modifications.” *Id.* (emphasis added). This statement makes it appear that there are two levels of exposure: levels causing injury and levels causing short-term effects.

The masked assumption is that all behavioral effects at RLs below 180 will be short-term. The idea that exposure to levels below almost guaranteed injury will not modify biologically important behaviors or that any such modifications will only be short-term is simply false. The Navy and NMFS are simply skipping over the 155 dB to 180 dB exposure area in which biologically significant behavioral changes will almost certainly occur and long-term effects can be expected. Even the OEIWEIS is willing to admit that marine mammals disturbed at low-to-moderate exposure levels could change a biologically significant behavior resulting in an impact on rates of reproduction or survival. OEIS/EIS at 1-28.

The entire risk analysis in the OEIWEIS is, therefore, based on yet another false premise.

In the Section titled “Determining Risk Function,” the OEIS/EIS provides a graph (Figure 4.2-2b at 4.2-14) that purports to show the Single Ping Equivalent Risk Function. The x axis of the graph is the “Received Level (RL) SPE – dB.” The y axis is “Risk of Significant Change in Biologically Important Behavior.” This graph uses the 180 dB RL as the point of 95% probability. As noted above, however, that level is the 95% probability level for injury, not for causing a significant change in biologically important behavior. As also noted above, the 95% level for such potential behavioral change takes place well below 180 dB. The graph’s y axis, therefore, falsely represents that the graph shows the probability of changing biologically important behavior.

The false analysis continues with the following statement: “The risk continuum modeled a smooth increase in risk that culminates in a 95 percent level of risk of significant change in biologically important behavior at 180 dB.” OEIS/EIS at 4.2-29. Again, the sound pressure level creating a 95 percent probability of injury is very different from the level creating a 95 percent probability of changing biologically important behaviors.

Obviously the chart presents an increase in risk until the level that the Navy defined as injury, not the level of significant change in biologically important behavior. This single instance of attempting to conceal the actual science on the central issues and the complicity of NMFS in assisting in that concealment call the integrity of this entire process into question.

3.3.3.8 Mitigation: 180 dB and You're Done

The Navy proposes to "minimize impacts" by limiting exposures ≥ 180 dB. OEIS/EIS at 5-1. At 180 dB, there is a serious potential for serious problems in hearing capacity. Animals exposed to this level are presumed injured.

Obviously, minimizing the high likelihood that animals will be injured hardly begins to minimize the potential impacts.

3.3.3.9 The Risk of Poor Analysis

The risk continuum developed by the Navy starts with assuming 120 db exposures are the minimum exposures causing effects on biologically significant behaviors. OEIS/EIS, Figure 4.2-2b at 4.2-24. Then the 2.5% assumed risk below 150 dB is added as the next data point. Id. Then the 180 dB injury level is added. Id. Finally, a 50% risk level is inserted at 165 dB based on graphing the prior data points and selecting a transition factor to determine the slope of the curve. Id., 4.2-30.

The risk continuum is entirely dependent on the interpretation of the SRP. Critics of the OEIS/EIS have challenged the extrapolation of risk from the very limited SRP results and cited the SRP scientists as stating: "Responses did not scale consistently to received level, and it will be difficult to extrapolate from these results to predict responses at higher levels." Technical Report #1 at 10.

The Navy responds in a recent Information Paper that the SRP is only used as a basis for concluding that a preponderance of the exposures will result in, at worst, temporary behavioral change and that the 180 injury level is derived from workshop determinations on the level that could cause serious hearing damage, not by extrapolating from SRP results. Appendix B, Information Paper – SURTASS LFA Sonar, Office of the Assistant Secretary of the Navy (Installation & Environment), an undated document distributed by Senator Daniel Inouye accompanying a letter dated May 17, 2001 (hereinafter "Information Paper"). The workshops are mentioned in the OEIS/EIS on page 1-28.

The OEIS/EIS does use the SRP as the basis for extrapolating the impacts at higher levels by graphing data based on both the SRP and the workshop conclusions in one graph. OEIS/EIS, Figure 4.2-2b at 4.2-24. The curve from the SRP level (2.5% risk at 150 dB) to the workshop level (95% risk of injury at 180 dB) is a "filling in the blanks" in an area where there is no data and no consensus.

The Information Paper states:

The analysis associated with SRP experiments did not extrapolate from 150 dB to 180 dB. The selection of the 180 dB criterion for the onset of potential injury to marine mammals from SURTASS LFA sonar was not related to or extrapolated from the results of the SRP. Several scientific and technical workshops and meetings at which the 180-dB criterion were developed are: [list of workshops].

The Navy accepts that risk to marine mammals of a significant change in biologically important behavior is high at a 180-dB received level and assumes

that this same risk is low below 150 dB received level (RL) because of the relatively modest responses observed during the SRP. The Navy acknowledges that there are no SRP data concerning the possible responses of representative cetaceans to LF sound above 155 dB. However, the risk continuum model utilized in the FEIS specifically addresses the potential for risk between 155 and 180 dB RL, and uses a very conservative methodology. The results of the FEIS acoustic analysis demonstrate that a very small portion of the modeled animals experienced LFA received levels exceeding 155 dB.

Information Paper at 4.

The fact that the 180 dB level is assumed as the point of injury through workshops does not mean that the analysis of risk and impacts does not extrapolate from the SRP. In fact, the OEIS/EIS specifically admits that the risk analysis extrapolates from the SRP. That extrapolation is both a part of the risk analysis continuum and the basis for assumptions about impacts on species other than those studied in the SRP.

The section titled "Determination of Risk Function" states:

In order to use this function, the values of the three parameters (B, K, A) need to be established. As will be explained in Subchapter 4.2.5, the values used in this OEIS/EIS analysis are based on the results of the 1997-1998 SRP.

OEIS/EIS at 4.2-25 (emphasis added). In other words, the three critical values to be used in the cumulative distribution function as representing the probability of risk all derive from the SRP.

In fact, the SRP is the crux of the risk continuum model. If the 2.5% risk at 150 Db is seriously in error, the entire risk continuum loses its meaning.

The OEIS/EIS goes even further to assume the 50% probability of risk takes place at 165 dB. Ibid. at 4.2-24, 4.2-30. That level is 5,000 times higher than the levels found in Phase III to cause a change in behavior that could have been biologically significant.

It is difficult to take such an analysis seriously.

The 50% point cannot move much lower because the 2.5% point set at 150 dB stands as a barrier. OEIS/EIS, Appendix D at D-2.

Finally, as noted above, the 180 dB point for the curve is far beyond the level at which changes in biologically significant behavior almost certainly occur.

The risk of poor analysis is particularly high in this instance because the OEIS/EIS conclusions are used to supplant previous research supporting far higher risks at lower levels. Ibid. at 4.2-25 – 4.2-27, 4.2-57.

3.3.3.10 Cooperating Computer Models

The third element of the risk analysis, after the SRP and the risk continuum, is the computer models in which the Navy gets to select the inputs. OEIS/EIS at 4.2-31 – 4.2-38.

The inputs selected by the Navy resulted in a finding that "a small fraction of any marine mammal stock would be exposed to sound levels exceeding 155 dB (See Appendix D and Figures 1-5a through 1-5c." Ibid. at 4.2-29.

Given the earlier decision to assign a 2.4% risk to exposures below 150 db, the results of the modeling are remarkably helpful to making the case for deployment.

The model approach to research can produce ridiculous results based on the assumption input to the model. For example, the OEIS/EIS discusses the potential impact of SURTASS LFA broadcasts on foraging animals as follows:

Here, it is assumed that the impact would involve reduced foraging efficiency for at most 20 days, out of a foraging season of perhaps 90 days. Even with a 25 percent reduction in foraging efficiency for all of the 20 days, this would represent only a 5 percent reduction in food intake for that season.

OEIS/EIS at 4.2-58.

Twenty consecutive days of eating 25% less food will produce a significant weight loss. That impact has its own implications for energy levels, efficacy of immune responses, success in avoiding predators, etc. To treat a 20-day reduction of 25% as the equivalent of a 5% reduction over 90 days is ludicrous. Assumptions piled on assumptions linked by illogical reasoning produce a meaningless analysis. The ease of manipulating models makes their use unreliable in highly controversial situations.

Such calculations assume that foraging is equally successful on all days when it is more likely that presence of food varies from day to day and ocean conditions for foraging vary from day to day. The impact of any significant ability to forage will vary based on these and other conditions. To assess that impact based on an assumption of uniformity for each day masks the potential for harmful effects under particular conditions, e.g. poor availability of food and/or ocean conditions impeding foraging efficiency.

Such calculations also fail to consider that the animals might leave the foraging area altogether and not have an available source of nearby food. In such a case, impacts could be severe.

Another model of risk is found in the Navy's use of the single ping equivalent to claim limited risk.

Because the Navy is only evaluating injury, the Navy assumes that a single ping at a given received level can be used to represent multiple pings at lower received levels. Ibid at 4.2-22. Thus 100 pings at 170 dB is assumed to have the same effect as one ping at 180 dB. Id.

Even assuming for the sake of argument that such an analysis might make sense for determining the potential injurious effects of repeated exposure, such an analysis provides no information about less than injurious effects and actually masks such effects.

For example, assuming that a group of whales in their breeding and birthing grounds found the sound of SURTASS LFA to be obnoxious, a single ping in their vicinity might cause a momentary response. One hundred pings at a lower dB might well cause the group to abandon their breeding and birthing area. The "injury only" analysis permitted by NMFS and conducted by the Navy does not evaluate such behavioral changes, even though they constitute Level B harassment and could produce long term adverse effects.

Perhaps the potential for such effects explains the Navy's continued refusal to consider the implications of the numerous reports from the 1998 Hawaiian testing that humpback whales left the test area, which also happened to be a prime breeding and calving area.

In analyzing resonance effects, the SPE approach appears to mask even potential injurious effects of repeated exposure. Should the broadcast be received at the resonant frequency of a critical tissue, 100 pings at a given decibel level could have far more injurious effects than a single ping at a level 10 decibels higher.

A similar masking of effects is seen in the models applying the duty cycle. The Navy argument is essentially that the SURTASS LFA system is turned on only 20 percent of the time, so chances of exposure to injurious broadcasts are limited.

The proposed duty cycle during routine deployment involves conducting sonar operations for up to 20 hours during an exercise day. OEIS/EIS at 2-8. The system would be turned on only 20 percent of the time (**duty cycle**), so the maximum broadcast time in a given day would be 4 hours. Id.⁸

The use of gross total times does not address the actual use. Apparently a typical use would be sending out a ping every 15 minutes, OEIS/EIS at 4.2-32, for 20 days, 24 hours per day. Ibid. at 4.2-21, 4.2-38. The system could apparently also be used to broadcast 6 second pings every 6 minutes or 10 pings per hour. Ibid., Comment 2-2.5 at 10-52.

The Navy assumes that behavioral impacts will be limited by the short mission lengths. OEIS/EIS at 4.2-57. This assumption is used to hypothesize that behavioral impacts will only result in partial disruption of critical behaviors. For example, the hypothetical case of broadcasts into a breeding area uses “a very conservative assumption that half of the animals lost one quarter of their breeding season” representing “a loss of from 1 to 5 percent of an animal’s lifetime reproduction potential.” OEIS/EIS at 4.1-58.

Such a hypothetical does not consider that the repeated exposure to less than harmful levels of LFA could cause an entire population to leave its breeding area and disrupt the entire breeding season of that population.

Similarly, the Navy hypothetical on foraging animals assumes that such animals would only experience a limited reduction in foraging while the system is broadcasting and resume foraging when broadcasts ceased. Id.

The Navy analysis assumes that 20 days of exposure is an overestimate of the duration “because most of SPE [single ping exposure] for individuals with high risk values takes place during a small fraction of the SURTASS LFA sonar exercise, when the individuals happen to pass close to the ship.” Id. Thus, treating the effects of a single ping at high levels close to the ship as equivalent to multiple pings at lower levels leads to ignoring the potential impact of multiple pings at lower levels taking place at substantial distances from the source.

With obnoxious levels of broadcasting possibly permeating large areas repeatedly over a 20 day period, an equally realistic scenario is that the animals leave the foraging area altogether and do not return the day after broadcasting stops. The loss of foraging for an extended period could have major detrimental effects on an entire population. The Navy uses human studies when those studies permit extrapolation that appears to support deployment. Perhaps the Navy should consider using human responses in evaluating whether the limited duty cycle argument really means anything. How would a human react if a car playing its boom box for a minute and a half at obnoxious, yet less than injurious, levels came through her neighborhood every 15 minutes for 20 days? At least humans can call the police! Who can cetaceans call?

⁸ The Navy states that the maximum physical limit for operation of SURTASS LFA is 20 percent. Ibid. at 4.1-2. The meaning of this statement is not clear. The statement would seem to mean that the system can only be on for a certain period of time and then must be turned off for four times that amount of time. The author does not find any explanation of the maximum time duration for operation. Asked to clarify this point, the Navy response does not provide sufficient detail. OEIS/EIS, Comment 2-2.5 at 10-52.

3.3.3.11 Harvesting the Poison Fruit

To complete the process, the OEIS/EIS applies the percentage risks selected for the risk continuum to the models of animal exposures. See e.g. OEIS/EIS, Figures 1-5a through 1-5c at 1-30,3 I.

Having made assumptions that keep the risk curve essential flat to 150 dB, the numbers of animals at risk is predictably small.

Having used the injury level as the 95% risk point, rather than an appropriate lower level for risk of change in biologically important behavior, the number of animals exposed to serious risk is also predictably small.

3.3.3.12 Reverse Engineering to Reach Minimal Impacts

The bottom line is that the Navy relies upon the extraordinarily limited SRP research to make unjustified assumptions regarding the probability of harmful impacts below certain levels and then extrapolates from those assumptions to the upper level identified as onset of injury to determine overall risk of impact.

The entire Navy presentation on risk gives the appearance of "reverse engineering." The Navy wants to broadcast at 2 15 dB. That level drops to 180 dB within a kilometer. A kilometer is about how far most mitigation measures can be effective. The Navy, therefore, needs to assume that no effects outside the 180 dB isopleth are significant. The Navy models can be manipulated to show that most marine mammals will not receive broadcast levels above 15 5 dB. The SRP is then used to supplant previous research by setting the threshold of effects at or near 155. Voila! The Navy is now capable of mitigation in the only area where long term effects are predicted (if we ignore the likelihood that RLs between 155 and 180 will cause such effects). NMFS

3.3.3.13 Through a Different Lens

A more reasonable treatment of the same data yields a very different result.

Assuming for the sake of analysis that the SRP data is statistically significant, as the Navy does, the data on cessation of humpback singing supports a conservative assumption that a potentially significant risk of changes in biologically important behaviors occurs in the 130 dB range.

If we give credence to the whale watch captains, helicopter tour pilot, and non-SRP shore observers that reported the whales leaving the Hawaiian test area shortly after the testing began, then a reasonable and conservative proposition is that whales left a prime breeding and calving area at broadcasts in the 120 to 150 dB RL range.

One basis for giving credence to those observations is that the court declarations on this subject come from people with a higher credibility in terms of experience and breadth of area observed than observers on the two Navy boats and at the SRP shore observation post.

The SRP boat observers were focused on whales in the immediate vicinity, particularly those subject top broadcasts. The SRP shore team had the responsibility to observe possible impacts on mother-calf pairs. Technical Report #1 at 105.

Another basis for seriously considering the possibility that the whales left the test area soon after tests began is even found in the whale observations by the SRP. See e.g. Ibid., Figure D-21

For a more detailed explanation of this subject, see Section 3.4.6.2, infra.

If cessation of whale song and moving out of a prime mating and calving area at RLs of 120 to 150, with a concentration of effects at exposures <140, then a conservative approach would be to set the 50% risk of changing a biologically important behavior at 135 dB and a 95% risk at 160 dB.

A simple exercise would be to graph the 135 dB/50% point and the 160 dB/95% point as the risk continuum. Such an exercise would radically alter the risk continuum graph in the OEIS/EIS.

Applying the new graph to the Navy models found in Figures 1-5a through 1-5c would place the vast majority of modeled pings with the impact zone.

Mitigation would be impossible.

Obviously in this example, certain assumptions were made that might not be quite accurate. For example, the 50% point was not determined by assigning a transition factor to the 120 to 160 curve.

The real question, however, is whether, again assuming the Phase III SRP results to be statistically significant, the assumptions and conclusions of this analysis make more sense than the assumptions and conclusions of the OEIS/EIS.

I submit that this analysis makes a whole lot more sense of the data than did the OEIS/EIS data.

3.4 Further Evidence of Bias in the OEIS/EIS

To truly evaluate the OEIS/EIS, NMFS would be well served to hire a psychologist to explain how people behave when they know the truth and are not allowed to speak the truth.

The OEIS/EIS does its best to suppress or obscure the truth. Nevertheless, the truth pops out in ways that demonstrate the conflicted nature of those preparing the document.

The risk analysis just discussed in one example of attempting to suppress or obscure the truth.

Another prime example of the conflict between needing to justify deployment and the truth is a document that takes diametrically opposed positions on the same factual question, depending on whether the truth supports deployment or exposes dangers of deployment. The document could be characterized as the Navy vs. the Navy.

3.4.1 Gray Whales: Indicator Species vs. Unique

On page 1-20, the OEIS/EIS states that the SRP made two assumptions: (1) selecting mysticetes (baleen whales) to study would provide a basis for reaching conclusions about impacts on all marine mammals and (2) selecting certain mysticetes would provide a basis for reaching conclusions about impacts on all other whale species.

The theory behind the selection of a few species was that whales are known to be sensitive to low frequency sound because they emit such sounds as part of their communications. The theory also assumed that certain whale species are more sensitive to sound than others, so that effects demonstrated or not demonstrated on those species would enable the Navy to reach conclusions about effects on all species.

The Navy selected four mysticete species: blue, fin, gray, and humpback. OEIS/EIS at 4.2-27 and 28. The response to Comment 4-5.2 on page 10-100 states that these species were selected because they are thought to have the best LF hearing, are for the most part listed, and there is prior data indicating an avoidance response by baleen whales to LF sound.

The Scientific Research Program selection of four whale species as the most sensitive and the best sites for detecting responses by those species "was a critical element of the logic of the LFS SRP. OEIS/EIS at 4.2-27.

This primary assumption behind the SRP is highly questionable. To claim that limited studies of four species of whales could provide a basis for conclusions about the impacts of LFA on all whale species or, even more questionably, all marine mammals is not supportable.

Furthermore, there is no obvious reason to assume that a species with LF hearing capacity less developed than the selected species will have less response to the sound. Some species might find the sound more irritating or obnoxious, even if they do not hear it as well. Some species live in canyons or other ocean floor structures that would cause the sound to reverberate resulting in greater impacts than on species living in open water. Some species may live in areas where sound channels are more prevalent and experience louder impacts than better LF hearers living in areas where such channels are less prevalent. Deep divers may experience impacts over a greater range as their internal systems adjust to depth. -Some species may have more limited human contact, or be more sensitive to predation, or be more prone to panic than the selected species. Analyzing these parameters might well have led to the selection of other indicator species.

Having made its choice, however, the Navy abandoned its position regarding the four species in the face of evidence that one of their selections avoided sounds at levels far below the planned deployment levels. Comment 4-4.18 at 10-96 of the OEIS/EIS raised a question about whales avoiding sounds at 115 to 120 decibels. Forced to acknowledge that gray whales avoid sounds in that range, the Navy took the following position: "Gray whales inhabit a unique environment, and all research conducted to date indicates that their behavior does not generalize to other species." *Id.*

Thus, Gray Whales are an indicator species for other species when the need is to justify the study of very few species as a basis for generalizing to all species.

But Gray Whales are totally unique when they demonstrate avoidance at levels the Navy cannot accept as a limitation for SURTASS LFA.

These two directly contradictory positions are only three pages apart in the FEIS. Clearly, the Navy wants the science to say whatever it needs to say to justify deployment.

The Navy knows that Gray Whales avoid sounds as low as 120 decibels. The Navy admits that significant changes in biologically important behaviors can begin at that level. OEIS/EIS at 4.2-30.

In addition, the Grey Whale is apparently being particularly impacted by the stresses placed on the ocean. A rapid decline of this species, once considered to have recovered enough from whaling to be removed from the endangered list, led to a recent petition being filed to re-list the species as endangered.

The Navy attempts to avoid the implications gray whale sensitivity and of their threatened condition by abandoning a critical premise of the SRP.

3.4.2 LFA USE: At Shipping Choke Points vs. Away from Shipping Centers

The Navy also attempts to avoid the implications of gray whale sensitivity by claiming that impacts on gray whales will be mitigated by geographic restrictions. *Ibid.* at 4.2-30. Presumably the mitigation referred to is the limitation of the sound field to below 180 dB within 22 km of any coastline. *See e.g. Ibid.* at 5-2.

As noted earlier, the OEIS/EIS emphasizes the need for SURTASS LFA in the “choke points” through which international shipping moves. OEIS/EIS at 1-3.

In arguing for limited cumulative impacts from SURTASS LFA use, however, the Navy states: “SURTASS LFA sonar operations would not generally occur in areas of other high levels of human activities (e.g. high shipping density).” OEIS/EIS at 4.4-4.

Given that the original purpose of SURTASS LFA was detection of submarines in the littoral environment where shipping noise precluded passive detection, see Section 3.2.2, sum-a., the OEIS/EIS claim that near shore environments will not be the focus of SURTASS LFA appears to be false. For training purposes, the Navy will undoubtedly use the SURTASS LFA system in the environment where wartime use might be most important. In addition, there is every reason to expect the geographic restrictions will be tossed over the side in time of threat or warfare.

3.4.3 Beaked Whales: Detecting an Unknown Sound

The SACLANTCEN report states that Cuvier’s beaked whales cannot be identified through vocalization recording ‘because their species-specific sounds are not known.’ SACLANTCEN at 2-47. While the Navy admits that there is no sound or hearing data on Curvier’s beaked whales, OEIS/EIS at 3.2-44, the Navy claims that passive acoustic devices have a 25% probability of detecting the presence of Curvier’s beaked whales. OEIS/EIS at 4.2-29. The OEIS/EIS does not offer any explanation as to how the sound of a beaked whale will be identified when no one knows what these whales sound like.

3.4.4 Deliberate False Statements and Material Omissions

One of the more serious criticisms of the OEIS/EIS is the inclusion of deliberately false statements and material omissions.

3.4.4.1 The Insonification of Chris Reid

The OEIS/EIS discussion of LFA effects on humans found on pages 1-18 and 1-19 contains no discussion of the adverse effects from LFA exposure suffered by snorkeler Chris Reid during the 1998 Hawaiian testing and documented in litigation at that time. As a defendant in that litigation, NMFS should have a complete record. Ms. Reid also submitted statements to the NMFS public hearings in Honolulu, Hawaii and Silver Spring, Maryland.

The OEIS/EIS on page 10-142, Comment 4-9.20 does respond to comments pointing out the omission of any discussion of this incident by referencing three other comments, of which two are relevant to these comments.

Comment 1-3.9 on page 10-46 asserts that all relevant issues and information from the 1998 legal proceedings in Hawai‘i have been considered.

Comment 4-5.26 on page 10-111 states: “there was no credible evidence to support allegations that humans suffered any ill effects from SURTASS LFA sonar transmissions.” This response references copies of declarations from plaintiffs and defendants included in Appendix C of the OEIS/EIS.

In Appendix C, the defendants’ corroboration of the Reid exposure is omitted.

Tabs A and B contain the two declarations filed by Chris Reid. The second declaration corrected the date of her exposure from March 12 to March 10, 1998.

Tab C is the declaration from the doctor who examined Ms. Reid. The doctor’s diagnosis provided extensive observations of physiological disruption and compared Ms. Reid’s condition to that of a patient “after an accident in an acute ward.”

Tab D contains the declaration of Captain Kevin Merrill documenting that March 10 was the correct date.

Tab F contains the declaration filed by Kurt Frstrup, scientist in charge of LFA testing, based on the first Reid declaration containing the wrong date. Frstrup states that a person at Ms. Reid's location on March 12 would have received a negligible exposure.

The OEIS/EIS does not contain the second Frstrup response stating that on March 10, a person at Ms. Reid's location would have experienced a received level of 125 dB exposure to the LFA broadcast.

An honest presentation of this evidence in the OEIS/EIS would, therefore, have provided a declaration from an injured person exposed to LFA sonar, confirmation of that injury by a doctor, confirmation of the exposure date, and confirmation of the exposure level by a scientist conducting the tests. There is no contradicting evidence available.

Only by omitting the second Frstrup declaration could the authors of the OEIS/EIS conclude that there was no credible evidence of an adverse effect on Ms. Reid.

Omitting that declaration also allowed the authors to avoid explaining how a 125 dB exposure to a snorkeler could cause such dramatic physical impacts and to explain why a 145 dB limit in diving and recreational areas would be acceptable in light of that incident.

Had the second Frstrup declaration been included, the Navy would also be hard pressed to explain why no attempt was made by the Navy to examine Ms. Reid, conduct a follow up interview, contact her doctor, or take any other steps that might provide relevant information on the impacts of this exposure.

It is difficult to conclude the omission of the second Frstrup declaration is anything but deliberate. This single instance of deliberately falsified information should be sufficient for NMFS to conclude that the Navy OEIS/EIS is not an adequate document upon which to base a deployment decision.

After the NMFS public hearing in Honolulu, the Honolulu Advertiser ran an article quoting extensively from Chris Reid's testimony and reporting a response from Joe Johnson of the Navy. Opinion on sonar sharply divided, Honolulu Advertiser, Sunday, April 29, 2001 at A27.

In his response, Mr. Johnson stated: "She [Chris Reid] is known to be one of the lead activists in Kona against [SURTASS LFA]." The implication is that Ms. Reid fabricated her injuries, her doctor's examination, and her long term rehabilitation efforts because she is an activist. This slander is hardly a response to the report of human injury.

One truly revealing aspect of the Reid incident is the lack of interest on the part of the Navy and the scientists in pursuing information about her experience. The Navy made no effort to have their doctors examine Ms. Reid or to discuss her condition with the doctor who examined her. The Navy, therefore, cannot provide any information contradicting Ms. Reid's report and resorts to the personal attack noted above.

The Navy's lack of interest obviously stems from the Navy's commitment to deployment and consequent desire to avoid evidence of adverse impacts.

The author of these comments prepared a report on the evidence of adverse impacts appearing during the Hawaiian tests, including the Chris Reid event.

The Navy denied permission for the author to attend a meeting of the SURTASS LFA advisory committee to present that report.

The author provided a copy of the report to the Navy that the Navy dumped in the middle of the table during the meeting. No discussion of the report took place.

Prohibiting the presentation of adverse information to the advisory panel and minimizing the likelihood that the panel would pay attention to a report containing such information is symptomatic of the lack of objectivity in the Navy process.

The scientists' lack of interest is perhaps more disturbing. A report of human injury would seem to provide an opportunity for research that would be compelling for a scientist truly interested in learning about the potential impact of this technology. At the NMFS public hearing in Honolulu, Dr. Frstrup took pride in pointing to the long list of scientists involved in the SURTASS LFA program. Not one of those scientists showed the least interest in investigating whether SURTASS LFA traumatized a human being.

In the opinion editorial noted earlier, Mr. Johnson claims that the scientific team conducting the Navy's LFA research off Hawai'i "did investigate" the claim of "injury to a snorkeler" from an LFA broadcast. Appendix B. The injured snorkeler reference is clearly to the injury reported by Ms. Chris Reid. He further claims that "the local National Marine Fisheries Service representative and a UH scientist also assisted the Navy team."

There is nothing in the court records or the OEIS/EIS that documents any such investigation. Ms. Reid knows of no such investigation. Based on this published statement, NMFS should request that Mr. Johnson provide a copy of the investigative report and identify the numerous personnel he claims were involved in the investigation.

There is a high likelihood that the "investigation" is a fabrication designed to mislead the public and discredit Ms. Reid.

3.4.4.2 The Disappearing Whales off Hawai'i

In 1998, the Hawai'i County Green Party filed a lawsuit to stop LFA testing in Hawai'i. Among the allegations, the suit alleged that the humpback whales had left the test area shortly after testing began. As a party to that lawsuit, NMFS should have a complete record of the evidence presented on this issue. This suit was one of four filed at that time.

The OEIS/EIS claims that all relevant issues and information from the prior legal proceedings has been considered. OEIS/EIS at 10-46, Comment 1-3.9.

Comment 4-5.10 on page 10-105 of the OEIS/EIS includes the identification of humpback whales leaving the test area as an issue.

In support of the allegation, plaintiff Hawai'i County Green Party filed numerous statements from whale watch boat captains, a helicopter tour pilot, and shore observers documenting their observations that the whales left the test area in the first week of March 1998 as soon as testing started. The boat captains and pilot had made observations regarding the presence of whales in these waters over an aggregate period of 125 years. None of this evidence appears in the OEIS/EIS. There is no discussion of the reports of whales leaving the test area.

The omission of this information cannot be other than deliberate. The author of these comments specifically referenced these reports more than once before the issuance of the OEIS/EIS. See e.g. OEIS/EIS, Volume 2 at E-234 (letter re failure to address reports in either the draft OEIS/EIS or Technical Report #1), E-354 (identification of lawsuits), E-356 (identification of reports on whales leaving test area), and F-46 and 47 (testimony about failure to address reports).

This material omission is actually an excellent case study in how the OEIS/EIS claims to address comments without actually doing so. As just noted, the author of these comments called to the Navy's attention the failure of the draft OEIS/EIS to address the reports of whales leaving the test area.

In the published comments, the Navy appends notations of where the responses appear to a particular comment. The format adopted by the Navy makes referencing between comments and responses quite difficult. For example, in the Detailed Responses to Comments, the Navy provides the number of the comment to which a response is being given, not the page number in Volume 2 where the specific comment appears. This format requires the reader to review an entire comment to find which particular part of the comment the response addresses. Some of the comments are quite lengthy.

In the example of the disappearing whales, on page E-234, where the author specifically calls attention to the reports, the Navy notes responses at 1-3.9 and 4-5.10. On page 354, where the author identifies the relevant litigation, the Navy notes a response at 1-3.9. On page F-46, where the author cites to the evidence from Hawai'i, the Navy notes responses at 4-5.25 and 4-5.10. On page F-47, where the author cites to the ignored evidence, the Navy notes a response at 4-5.46. On page F-48, the Navy cites responses at 4-5.10, 4-5.46, 4-9.3, 4-9.19. Examination of these supposed responses illuminates a non-process at work.

The response at 1-3.9 simply declares that all relevant issues and information from the lawsuits was considered. There is nothing about the reports on disappearing whales.

The response at 4-5.10 claims that there was adequate baseline data on whale locations prior to the initiation of SURTASS LFA transmissions off Hawai'i and that "whale locations were mapped to the fullest extent practicable." In fact, there was no base line data on whale locations and no mapping of whale locations prior to the initiation of testing. Further discussion of this claim appears below.

As far as the reports of whales disappearing from the test area, the response found at 4-5.10 is deceptive. Referencing aerial surveys, the response claims that humpback whales are most numerous in Hawai'i's waters from November through mid-April and most numerous near shore from December through February. OEIS/EIS at 1- 105. This response attempts to portray the whales as beginning to leave near shore areas, e.g. the test area, in February, e.g. before the tests started, while the whales remain further offshore until mid-April. The Navy provides no citation for this supposed behavior.

The characterization of whale behavior is simply not accurate. The OEIS/EIS does not provide copies of the whale watch boat captains and other providing their observations over many years of the actual behavior of the whales and the unusual occurrence of having the whales leave the area where the testing focused so early in March.

The OEIS/EIS response cites the surveys of Dr. Joseph Mobley. Id. In a report co-authored by Dr. Mobley, the following appears:

During 1993, 74 percent of all humpback whale sighting occurred in waters less than 100 fathoms, with only 20 percent of effort within this depth stratum [citation omitted]. These results provide stronger support for descriptions of inshore waters as preferred habitat for humpback whales [citation omitted].

Preliminary Results of 1993 and 1995 Aerial Surveys of Hawaiian Waters by J.R. Mobley Jr., P.H. Forestell, and R.A. Grotefendt presented to An Overview of Biology and Life History Studies of the Humpback Whale in Hawaii and in the North Pacific Workshop found in Report of the Workshop to Assess Research and Other Needs and Opportunities Related to Humpback Whale Management in the Hawaiian Islands, 26-28 April 1995, Kaanapali, Maui, Hawaii, Compiled by P. Michael Payne, Brady Phillips, and Eugene Nitta, February 1997.

Furthermore, the charts of whale sightings by Dr. Mobley provided in the record of the litigation shows a high concentration in near shore waters in every survey.

The response to Comment 4-5.25 does not discuss the disappearing whales at all.

The response to Comment 4-4.46 does not address the disappearing whales.

The response to Comment 4-9.3 does not address the disappearing whales.

The response to Comment 4-9.19 does not address the disappearing whales.

So when all is said and done, the OEIS/EIS continues to exclude from its record all statements of whales prematurely leaving the test area the first week of March and offers an unsupported conclusion that whales leaving the shallow waters is normal at that time of year as the only substantive response to this issue.

An important point to keep in mind is that the reports of whales leaving came from more than fourteen different observers covering an area far larger than the observation area of the two Navy ships and the one shore observation post included in the SRP. There is every reason to conclude that the observations provided to the court in Hawaii by the plaintiffs are more reliable than those provided by the Navy.

The exclusion of all the relevant evidence leaves NMFS without an appropriate basis for assessing the questions presented.

There were two related questions: (1) Did the whales leave the test area and not the rest of the Kona coast waters when the testing began? And (2) When did the whales leave the Kona coast waters?

The actual evidence submitted by Dr. Mobley showed an abundance of whales off the Kona coast in the first week of March. See Tab G, paragraph 8. The abundance of whales off the coast at the same time the reports came in of the whales leaving the immediate area of the broadcasts supported plaintiffs argument that the testing caused the whales to leave the test area.

In the litigation record, there is a declaration from Eugene Nitta of the NMFS office in Honolulu dated March 26, 1998. Nitta stated:

At a briefing for state and federal agency representatives on March 24, 1998 at the Honolulu Laboratory, Dr. Chris Clark noted that whale numbers seemed to be declining over the last two weeks, which is well within the normal range of migration patterns of humpback whales that are returning to northern waters. There are local population fluctuations over the course of a season, but the usual peak for numbers of humpback whales in Hawaiian waters generally runs from early to mid-February to mid- to late March. Aerial survey data from Dr. Joe Mobley for the west side of the Big Island supports this general observation.

The Nitta declaration records Dr. Clark as noticing the decline in whales in the test area beginning on or about March 10. The OEIS/EIS appendix containing court documents omitted this declaration from Nitta. OEIS/EIS, Appendix C.

The Mobley surveys were on March 1, March 8, and March 16. The surveys showed an abundance of whales off the Kona coast on March 1 (44) and 8 (44) and a sharp decline by March 16 (2 1 total around the island, no data available on just the west side).

Dr. Mobley provided a declaration that included the sightings per minute rate. OEIS/EIS, Appendix C, Tab G. On March 1, the 44 whales were sighted at a rate of .21/minute. On March 8, the sightings were at the rate of .29/minute. The duration of the survey on March 1 was 206 minutes. The duration of the survey on March 8 was 151 minutes. In other words, the Mobley survey found just as many whales on March 8 as on March 1 in less time. The data implies that there were actually more whales off the Kona coast on March 8 than on March 1.

In the first week of March, the Mobley survey found the number of whales off the Kona coast to be increasing. As noted above, the Mobley survey did not include the test area. This data supports the following hypothesis: the increase in whales off the Kona coast outside the test area is a result of whales moving out of the test area into the surrounding waters.

That Dr. Clark did not notice the reduction in the number of whales in the test area until on or about March 10 is attributable to the limited observation range of the SRP team and their involvement in conducting the testing and/or monitoring specific whales in the test area. Busy with the microcosm, the SRP team did not become immediately aware of the macrocosm.

There is, however, even support for the proposition that the whales left the test area in early March in the SRP itself

SRP personnel on the water did spend some of their time counting whales within their view. The chart of their observations shows a precipitous drop in the whale group sighting rate on March 8. Technical Report #1, Figure D-2 1.

This data supports a hypothesis that the whales had left the test area in significant numbers during the first week of testing while remaining in the waters outside the test area.

The same chart shows some increase after March 8 and then a steady and significant drop over the next week.

This data would seem to confirm Dr. Clark's report of a significant decline beginning on or about March 10 and suggests that some whales returned to the test area temporarily before leaving the area altogether.

The bottom line of the disappearing whales information is:

The Navy's Scientific Research Program did not perform a survey of whale locations prior to the initiation of LFA testing off Hawaii. Numerous observers with years of experience saw the whales disappearing from the LFA test area when the testing began in the first week of March and well before they would normally begin migrating north,

The Mobley surveys in the first week of March showed higher numbers of whales off the Kona coast outside the test area at the same time the whales reportedly left the test area.

The Mobley surveys showed a higher number of whales outside the test area on March 8 than on March 1.

Clark reported whales leaving the test area at about the same time Mobley recorded the highest number of whales off the Kona coast outside the test area.

Under these circumstances, there is a reasonable inference that the whales found the LFA sound to be at least obnoxious and **left** the test area. This data was important and should have been a matter of both interest and concern to the Navy and the scientists. To the contrary, neither the Navy nor the scientists made any attempt to follow up with those observing the whales departing to gather further information.

The conclusion that the whales left the test area has far more support than the OEIS/EIS concocted theory about whales leaving the near shore waters by the end of February.

The evidence supports NMFS accepting the possibility that SURTASS LFA testing drove humpback whales out of one of their favorite breeding and birthing areas. Such effects are obviously biologically significant.

The exclusion of this evidence and the failure of the Navy to make any effort to **further** research this evidence is additional proof that the OEIS/EIS is a seriously deficient and biased document.

3.4.4.3 The Aerial Survey that Wasn't

The response to Comment 4-5.10 claims that there was adequate baseline data regarding whale locations. The response contains the statement that "prior to the commencement of SURTASS LFA sonar transmissions, whale locations were mapped to the fullest extent practicable." OEIS/EIS at 10- 105. The OEIS/EIS references the surveys conducted by Dr. Joseph Mobley of the University of Hawaii. Id.

When the final report from Mobley appeared long after the testing ended, his charts of March 1 and 8 showed an abundance of whales off the coast and a complete absence of whales in the primary test area off Keahole Point. Mobley's surveys in prior years showed the Keahole Point area to be a primary location for the whales.

Mobley later explained that his randomly chosen survey grid did not include Keahole Point. The OEIS/EIS, therefore, uses a survey during the test period that excluded the test area as support for the proposition that whale locations before testing were known and for the proposition that the whales did not leave the test area when testing began.

Dr. Mobley did not conduct any surveys prior to the commencement of testing in 1998. Joe Mobley did conduct surveys during the testing. His results, however, were never intended to be a pre-testing survey nor to be released until long **after** the testing ended. Dr. Mobley's first report on his survey results appears as Tab G and is dated March 19, which is well after the testing began the first week of March.

To claim this data provided whale locations "prior to the commencement of SURTASS LFA sonar transmissions" is simply false. If the Navy did not intend to cite the Mobley survey as the basis for the claim, the author knows of no other survey done prior to the initiation of testing nor has the Navy presented any such survey in the litigation to date.

This dishonesty is not the only example of an OEIS/EIS designed to justify deployment, no matter what the evidence.

3.4.4.4 Other Omissions

NMFS has a complete record of the reports filed during the 1998 Hawaiian litigation. Those reports include additional evidence of abnormal behavior occurring in the water off Hawaii during the testing, including schooling of hammerhead sharks in areas where such schooling had not been seen before, whales swimming at high speeds, and dolphins behaving as if threatened. The draft OEIS/EIS did not discuss these reports. The final OEIS/EIS continues these omissions.

4.0 NMFS: Decision-maker or Enabler

NMFS acknowledges three roles in the decision-making process on deployment of SURTASS LFA, although NMFS does not clearly delineate these as separate roles.

First, NMFS' legal jurisdiction over and expertise in matters included in the Navy's decision-making, e.g. marine mammals, gave NMFS an opportunity to be a cooperating agency in the Navy's process. NMFS did agree to act as a cooperating agency in the EIS process for SURTASS LFA deployment. In that capacity, NMFS claims its participation was limited to review and comment. Comment Response 45 to Proposed Rule, Fed. Reg. Vol. 66, No. 53, March 19, 2001 at 15384 (Hereinafter "Comment Response").

Second, NMFS' role in reviewing and commenting is to ensure the EIS prepared by the Navy meets the Navy's obligations under NEPA. *Id.*

Third, the proposed NMFS itself rule falls under NEPA. NMFS, therefore, has a legal responsibility to fulfill its own obligations under NEPA. Comment Response 44. NMFS intends to fulfill that responsibility by adopting, in whole or in part, the OEIS/EIS prepared by the Navy. *Id.*

NMFS can interpret these roles narrowly or broadly.

The narrow path would lead NMFS to assume that the only information in the EIS of concern to NMFS is the information directly related to the potential impact of SURTASS LFA deployment on marine mammals and endangered species. Only serious deficiencies in those parts of the EIS would be cause for rejecting the application.

A broader approach would lead NMFS to at least require a Navy OEIS/EIS in full compliance with NEPA. Any significant deficiencies in the OEIS/EIS would call into question the adequacy of the document as a whole and be a basis for NMFS to reject the application.

A middle approach would be for NMFS to take note of any serious deficiencies in the OEIS/EIS not directly related to marine mammals and apply a higher level of scrutiny than normal to the marine mammal-related portions.

These comments argue for NMFS to take the broadest possible perspective on NMFS authority and responsibility.

If NMFS is responsible for ensuring that the Navy's OEIS/EIS meets NEPA requirements, then NMFS should fulfill that responsibility.

The broadest approach is warranted by the extraordinary breadth of an application proposing to introduce potentially harmful noise into 80% of the Earth's oceans.

By taking that approach, NMFS also increases the likelihood that the final decision on deployment by the Navy will be based on all the necessary information being in front of the decision-maker.

To allow the process to go forward based on an OEIS/EIS with serious deficiencies simply to accommodate the Navy increases the possibility of a mistake by the final decision-maker.

4.1 NMFS and National Security: Blinking Too Early

The proposed deployment of SURTASS LFA is argued by the Navy to be a matter of national security importance.

NMFS has responded to this claim by the Navy as if that claim somehow reduced the role of NMFS in applying the law to the proposed deployment. This response improperly abdicates NMFS' legal responsibilities, raises constitutional questions, and undermines the integrity of the overall decision-making process.

4.1.1 Complicity in the Outlaw Years

NMFS complicity in the Navy's violation of environmental laws in the period from the early 1980s until now is discussed in Section 2.0 above. Apparently, the national security aspect of the Navy's development of a deployable system led to a "hands off" approach by NMFS, even if that approach meant allowing the Navy to violate the law.

The question before NMFS now is whether that complicity will continue. Accepting the OEIS/EIS as adequate when the procedural and substantive deficiencies are obvious would demonstrate that there is indeed a lack of regulatory commitment and that conflicting interests within NMFS still prevail over regulatory integrity.

4.1.2 NMFS Legal Responsibilities

NMFS responsibility under MMPA is to make a "determination on whether the incidental harassment takings by SURTASS LFA sonar is at the lowest level practicable." Comment Response 29. Cf. 16 U.S.C. § 1371(a)(5)(A)(ii)(I). This responsibility is to limit as far as practicable harassment of marine mammals as defined in the MMPA. Those definitions include injury, 16 U.S.C. § 1362(18)(A)(i), and disruption of behavioral patterns, such as breeding, nursing, breathing, and feeding. 16 U.S.C. § 1362(18)(A)(ii). Injury is Level A harassment. 16 U.S.C. § 1362(18)(B). Disruption of behavioral patterns is Level B harassment. 16 U.S.C. § 1362(18)(C). NMFS is charged with minimizing both levels of harassment.

4.1.3 NMFS Constitutional Responsibilities

NMFS is a civilian regulatory agency within a constitutional system that mandates civilian supremacy over the military. NMFS is charged with enforcing the laws applicable to all federal agencies, whether military or civilian. NMFS' constitutional responsibility is to maintain its independence and to apply the laws passed by Congress without regard for the nature of the regulated entity.

4.1.4 NMFS Responsibility for Regulatory Integrity

By assuming its appropriate role as the agency charged with enforcement of the Marine Mammal Protection Act and its appropriate independence from the military, NMFS is in a position to contribute substantially to providing critically necessary guidance to the final decision-maker.

Ultimately, the final decision-maker must decide whether the OEIS/EIS is a reliable basis for a decision.

Any acceptance of a deficient document by NMFS places the NMFS stamp of approval on that document and misleads the final decision-maker. A rigorous critique of those deficiencies could well lead to the final decision-maker concluding that the

OEIS/EIS is not an adequate document and **further** work is necessary. To the extent an inappropriate acceptance by NMFS misleads the final decision-maker into also accepting the document, NMFS will bear responsibility for a decision that may well be a serious error.

Any limitation on NMFS consideration of necessary mitigation measures, e.g. by limiting the circumstances NMFS considers, denies the final decision-maker the benefit of knowing what appropriate mitigation would be in all circumstances. Requiring the Navy to provide a comprehensive analysis of potential environmental impacts and responding with mitigation measures appropriate to all those impacts presents the final decision-maker with a true picture of what would truly be required by a rigorous application of the MMPA to the proposed deployment. That information allows the decision-maker to evaluate whether such comprehensive or an alternative means of achieving the same mission should be pursued.

This approach places the Navy and NMFS in their appropriate roles and provides the final decision-maker with the best possible information upon which to base a decision.

4.1.5 NMFS: Doing the Right Thing

Section 3.0 above details numerous deficiencies in the OEIS/EIS. The deficiencies noted are only some of the deficiencies in this document. Other comments already filed or to be filed highlight additional serious defects. At the same time, the inadequacies set forth in these comments are sufficient to conclude that the OEIS/EIS is not an adequate basis for decision-making. There are ample grounds for NMFS to make a determination that the OEIS/EIS is not an adequate basis for NMFS rulemaking. That determination can then lead NMFS to reject the Navy's application.

The Navy would then face the decision whether to abandon the attempt to deploy SURTASS LFA or to do a far better job of preparing an environmental impact statement.

Many of the deficiencies noted include failures of the OEIS/EIS to consider conditions or parameters that are relevant and important. One of the most obvious omissions is the failure to consider environmental impacts during threat and warfare conditions. See Section 3.1.

In discussing the use of SURTASS LFA under these conditions, NMFS states: "NMFS does not have a role in making these determinations [whether SURTASS LFA will be used in threat or warfare conditions]. Therefore, takings during these situations would not be covered by the regulations or the LOAs."

Comment Response 3.

Even assuming for the sake of argument that the Navy has the sole responsibility for determining how SURTASS LFA would be used in threat and warfare conditions, that assumption does not remove NMFS from any role in assisting the Navy in making those determinations. To the contrary, NMFS abdication of its appropriate regulatory function violates the constitutional order that requires civilian supremacy over the military.

NMFS does have a role to play in determining whether SURTASS LFA will be used in threat or warfare conditions.

First, NMFS can require that an assessment of the environmental impacts during such conditions be made.

Second, NMFS can determine that the impacts are substantial enough to violate the MMPA limits or that additional mitigation measures are required under those conditions to bring the Navy into compliance with MMPA.

Third, NMFS can deny Letters of Authorization and permits based on the damage exceeding the legal limits or can impose the additional mitigation measures as a condition in the rule governing deployment.

In taking such an approach, NMFS would fulfill its legal obligations, maintain the appropriate constitutional supremacy of civilian authority, and provide the final decision-maker with a true basis for evaluating the implications of deployment.

For NMFS to pretend that such a scenario is outside its authority simply avoids the agency's responsibility and subverts the law. NMFS abdicating its statutory responsibility is tantamount to an unconstitutional delegation of power to the military.

Societies in which the military is free to determine whether to obey the laws of a civilian government can reasonably be termed military autocracies. A Navy claim of national security cannot be allowed to justify simply ignoring the law.' NMFS should not so cavalierly embrace the Navy's suggested model of government, however appealing that model may be to the Navy.

An NMFS failure to perform its proper function creates the potential for the Navy to act illegally without consequences, presumes military supremacy over civilian law, and seriously misleads the final decision-maker as to the implications of a decision to deploy.

NMFS performing its appropriate role will not be without controversy. The Navy is already complaining to Congress that conformance to environmental laws is too difficult.

For example, Vice Admiral James F. Amerault recently delivered the following statement to a U.S. Senate subcommittee:

Moreover, the possibility exists that all of our at-sea testing, training, and exercises that use active acoustic devices (e.g., standard ship sonars), ordnance, or any other device or practice that could "affect" protected species, will be required to obtain incidental take statements under the ESA, and/or Incidental Harassment Authorizations/Letters of Authorizations (IHA/LOA) under MMPA. Obtaining these authorizations is a lengthy process, requiring substantial investment in supporting data collection, and is good for a limited time only (one to five years

⁹ The Navy claim of national security urgency is itself questionable. For example, on page 1-5, the FEIS states that the Russian Federation is building "new classes of highly capable submarines" and operating "its newest vessels outside of home waters, including waters contiguous to the U.S." On the same page, the OEIS/EIS states that "by 2035, the U.S. may be seriously and competently challenged by submarines from major powers (Russia and China) or from a number of potentially unfriendly nations."

A threat potential more than thirty years from now hardly justifies the rush to deploy.

Furthermore, this statement is contradicted in an article appearing in the Christian Science Monitor on February 7 of this year. Cold realities of Russia's Navy, Wednesday, February 7, 2001. The article reports that Russian sailors are growing their own food and stealing because the budget for the Navy has been slashed so severely.

The same article reports that, according to Joshua Handler, a naval analyst at Princeton University in New Jersey, "the nuclear-submarine force is down to its last very thin mooring line." Handler foresees the Russians choosing to get by with a "coastal defense force" while relying on their land-based missiles for nuclear deterrent.

The U.S. Navy is not immune from the tendency to exaggerate a potential opponent's capabilities as a classic device for justifying larger military budgets and military approaches to political problems.

for an II-IA and LOA, respectively). In addition, a rigorous public process is involved under the MMPA. Costs for routine training are likely to increase dramatically due to mitigation requirements, such as continuous aerial surveys, additional spotters, and delay. None of these practices allow us to train as we fight. Night-time training and training in high sea states will decrease because of limited visual capability for spotting marine mammals. All of these could result in significant degradation in readiness.

Obtaining authorizations is costly, both in terms of time and money, with a consequent impact on readiness. For example, the \$350 million Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) Sonar Operations (SURTASS LFA) sonar, an anti-submarine sensor system, already in use by Russia and France, has not been deployed despite the positive results of a two-year Navy-funded research project demonstrating the environmental compliance of the system. There have been at least four lawsuits challenging the conduct of marine mammal research with SURTASS LFA sonar in the Hawaiian Islands. To date, we have expended over \$10 million in the collection of data and the preparation of a worldwide Environmental Impact Statement (EIS). We have engaged reputable marine mammal scientists nominated by the Natural Resources Defense Council to act as independent advisors and have included substantial mitigation in the deployment plan. Deployment of the system is still uncertain because of the likelihood of lawsuits, the non-concurrence of the California Coastal Commission, and NOAA Fisheries' unwillingness to provide a "take" permit for a large area of the eastern Pacific until California Coastal Commission concurrence is obtained.

Statement of Vice Admiral James F. Amerault Deputy Chief Of Naval Operations, Fleet Readiness and Logistics before the Subcommittee on Readiness and Management Support of the Senate Armed Services Committee on "Encroachment" Issues having a potentially adverse impact on Military Readiness, 20 March 200 1.

Along similar lines, Admiral William J. Fallon delivered the following statement to a U.S. House committee:

A. Use of Sonar and Explosive Sound Devices

The threat posed by quiet, hostile submarines makes it essential for us to conduct anti-submarine warfare training operations. Active sonar, which is used to locate and counter this threat, is under increasing environmental scrutiny. We are investing \$18 million in research over the next three years to better understand whether these sonars affect marine mammals.

1. Delayed Deployment of Weapons Systems

Meeting the requirements of the Marine Mammal Protection Act and Endangered Species Act can be an expensive, time-consuming process. For example, the \$350 million Surveillance Towed Array Sensor System Low Frequency Active Sonar has not been deployed despite having completed a two-year, \$10 million Navy-funded research project and Environmental Impact Statement that has demonstrated the environmental compliance of the system. Its deployment is

still uncertain because of the likelihood of lawsuits and the non-concurrence of the California Coastal Commission.

Statement of Admiral William J. Fallon, Vice Chief of Naval Operations Before the House Committee on Government Reform on Constraints on Military Training, 9 MAY 2001.

If ever a program called out for enforcement of environmental laws and would have benefited by timely compliance with environmental laws, SURTASS LFA is the program. Regrettably, the Navy has apparently not yet learned that lesson.

For purposes of the decision before NMFS on SURTASS LFA deployment, this testimony highlights the statutory independence of NMFS. The military is free to complain about having to protect other species and to campaign to change the law. Until such time as that campaign actually results in any statutory changes, however, NMFS is mandated to perform its regulatory function.

4.1.6 NMFS: Doing the Wrong Thing

The example of abdicating its responsibility to require an evaluation of threat and warfare conditions is, unfortunately, only one of many examples of NMFS not fulfilling its regulatory responsibilities or narrowing the scope of its authority inappropriately.

4.1.6.1 Erasing Level B Harassment

As noted above in section 4.1.2, NMFS is responsible for minimizing Level A harassment (injury) and Level B harassment (interference in normal behavior). NMFS responsibility is not limited to preventing serious injury.

Yet in the Comment Responses, NMFS simply abandons any attempt to minimize Level B harassment. When a comment raised the issue of sound pressure levels (SPLs) below 180 dB having behavioral impacts, NMFS responds:

While the commenter is correct that behavioral modifications can be expected at lower SPLs, the proposed monitoring (visual, passive acoustic and active acoustic), is not likely to be as effective at the greater distances where these impacts are likely to occur. As a result, NMFS prefers to require the Navy to concentrate monitoring in an area wherein marine mammals are more likely to incur an injury, than at distances wherein the incidental taking will be limited to short-term behavioral modifications.

Comment Response 23.

In other words, the Navy monitoring system is probably incapable of detecting incidences of Level B harassment, so NMFS is willing to limit Navy monitoring to only detection of Level A harassment. The underlying assumption appears to be that if the potential for injurious effects is low, then the potential for behavioral effects is also low. That assumption is irrational. See Section 3.3.3.9, supra.

Furthermore, NMFS is willing to assume that any Level B harassment that takes place, e.g. interruption of breeding, nursing, breathing, and feeding, will have only short-term effects. This abandonment of any attempt to exercise the required regulatory oversight is further evidence of an agency overly concerned with accommodating the plans of an applicant.

The abandonment of regulatory limits on Level B harassment in the proposed rule is the culmination of a process underway for at least three years.

In 1998, as part of the Scientific Research Program for SURTASS LFA deployment, the Navy contracted with scientists to perform tests of the SURTASS LFA system off the Island of Hawai'i.

The scientists applied to the National Marine Fisheries Service for permission to harass humpback whales during their mating and calving season. The harassment would take the form of broadcasts of LFA, termed playbacks, directed toward selected whales. Dr. Peter Tyack was one of the scientists.

In their application, the scientists stated: "If any unexpected responses, such as major modification of whale behavior in the area, especially among mother-calf pairs, are observed, or if any reaction is noted that raises the possibility of any deleterious effect on the whale subjects, the playback experiment will be terminated."

NMFS issued a permit with the following conditions:

Source transmission shall be suspended immediately if an acute behavioral response (e.g. repeated/prolonged activity (vocalization, breaching, blowing, time on surface, etc.), potential injurious activity, abnormal number of animals present or absent in the area, abnormal mother-calf activity, or erratic swimming behavior of pinnipeds, small cetaceans, or sea turtles)) by a marine mammal or sea turtle is detected.

NMFS failed to enforce those conditions when numerous observers in boats, on shore, and in the air reported an abnormal disappearance of whales from the test area. A lawsuit filed to challenge that NMFS failure to act was dismissed as moot when the tests stopped.

Apparently concerned about placing limitations on LFA testing or having to enforce such limitations, NMFS changed the conditions on a later permit for LFA research.

NMFS granted another permit to Dr. Peter Tyack to conduct low frequency testing on cetaceans. Under this permit, the researchers are permitted to harass animals.

In this case, harassment can include "interruptions of breeding, nursing, or resting activities; attempts by a whale to shield a calf from a vessel or human observer by tail swishing or by other protective movements; or the abandonment of a previously frequented area." These are conditions that are now allowable, as opposed to conditions requiring immediate suspension under the earlier permit.

The only limitation comes later in the permit, to wit "an approach or specific research activity must be discontinued if during the approach/activity either target animals (i.e. those being actively studied by the researcher) or non-target animals exhibit three instances of harassment per day." (emphasis in the original). Harassment actions prohibited before are now allowed and can be inflicted up to three times per day." The permit allows such harassment to continue over a five-year period.

In the proposed rule, NMFS takes the next step by abdicating all responsibility for setting limits on Level B harassment.

¹⁰ The author of these comments prepared an extensive analysis of how the Woods Hole Oceanographic Institute, Dr. Tyack, and NMFS cooperated to hide the nature of Dr. Tyack's permit application from the public and prevented public awareness and comment. This paper can be found at:

<http://www.geocities.com/shootdaguy/research/tyackpermit.html>

<http://manyrooms.net/TyackPermit.htm>

<http://www.angelfire.com/ca/fishattorney/LFAS/tyackpermit>

The arbitrary nature of NMFS regulatory protection of cetaceans suggests an overly solicitous approach to LFA research.

Has the Navy's pursuit of low frequency active sonar led the National Marine Fisheries Service to declare open season on cetaceans by removing regulatory protections previously considered necessary?

4.1.6.2 Ignoring Adverse Evidence

NMFS makes the astonishing comment that "there is no evidence linking SURTASS LFA sonar transmissions to any stranding event..." Comment Response 13.

Even the OEIS/EIS acknowledges that the 1996 strandings of beaked whales on the Grecian coast could have been associated with a NATO LFA exercise. OEIS/EIS at 3.2-46. The OEIS/EIS quotes the NATO panel that investigated this event as stating: "Behavioral responses to acoustic transmission must be taken into consideration as a possible cause for strandings..." While the OEIS/EIS limits discussion of the Grecian event to two paragraphs, even that limited presentation contradicts the NMFS position that there is no evidence linking strandings to LFA transmissions. A discussion of the OEIS/EIS' inadequate treatment of the Grecian event is found in Section 4.1.3.4 above.

A more in depth examination of the Grecian event only makes the NMFS position appear more ridiculous.

Among whales, only the right whale floats when dead. All others sink to the ocean floor. LFA and other sonars could be killing whales regularly without any evidence appearing to human observers. Injured or dying whales appearing on the shore would, therefore, be an exceptional event offering a rare opportunity to investigate the cause of the stranding.

In the case of the LFA exercises in the Mediterranean coinciding with the stranding of numerous beaked whales, NATO either had no monitoring system in place to detect such an event or ignored the dead whales. As a result, the Navy made no effort to conduct necropsies and determine direct proof existed that LFA killed the whales. There should be a burden of proof placed on the Navy for its failure to detect and investigate these deaths. Instead, NMFS tries to give them the benefit of the doubt and demand that others somehow prove LFA responsible.

When an independent scientist called attention to the simultaneous LFA test and beaked whale stranding two years after the event, NATO did convene an investigative panel that produced a report known as the SACLANTCEN report. Presumably, NMFS has a copy of that report and has studied the NATO findings.

In the Grecian event, the NATO panel investigating the deaths stated; "It is speculated that currents in the sea may have contributed to the appearance of the stranded animals." SACLANTCEN Bioacoustics Panel Findings and Recommendations. In other words, the bodies washed up on the shore rather than sinking because strong shoreward currents carried them onshore. The report also states: "the number of stranded whales could be larger as it is known that most cetaceans sink when they die." SACLANTCEN at 2-4.

In the SACLANTCEN report, an objective researcher can find the following:

"Ziphius [beaked whale] inner ear anatomy suggests that there may be a unique vestibular [orientation and balance] sensitivity to lower frequencies compared to other odontocetes that could engender disorientation or discomfort if exposed to intense lower sound frequencies." Id.

“Purely behavioral responses to sound, such as precipitous flight, cannot be dismissed.” Id.

“Based on reasonably comprehensive data, no physical environmental factor was found to be a causative agent for the strandings. Id.

“In addition, military activities, such as SWAC [Shallow Water Acoustic Classification] research, has been implicated in the strandings of a number of beaked whales. However, evidence to support a direct link between such activities and beaked whale strandings is at present limited.” SACLANTCEN at 2-15.

A reasonable interpretation of these findings is that beaked whales may be extraordinarily sensitive to low frequency sound, may become disoriented by such sound, and may move rapidly away from such sound. That confluence of factors supports an inference that beaked whales could strand while fleeing from LFA.

Furthermore, the panel found no possible other cause to explain the strandings and that the Grecian event was not the first time acoustic research has been linked to beaked whale strandings.

While the case proving LFA caused the Grecian stranding may be based on circumstantial evidence, that case is strong. The NMFS cavalier statement that there is no evidence linking LFA to strandings is a political statement designed to protect the Navy, not a scientific statement.

4.1.6.3 Singing the Navy's Tune

One of the most egregious examples of accommodation of the Navy is found in the NMFS acceptance of the 180 decibel level as safe for marine mammals. The Response to Comment 20 states:

However, NMFS does not agree that the proposed incidental takings would result in more than minimal levels of serious injury. Because serious injury is unlikely to occur unless a marine mammal is well within the 180 dB SURTASS LFA sonar safety zone and close to the source, and because the closer the mammal is to the vessel, the more likely it will be detected, and the SURTASS LFA sonar operation suspended, the potential for serious injury to occur is minimal.

The manner in which this response swallows the Navy's position hook, line, and sinker is almost breathtaking.

NMFS seems to stretch the Navy position further than the Navy does in order to minimize the supposed impacts. As noted in an early response, the Navy claim is that serious injury will not occur until exposure reaches 180 dB and that such injury can occur from a single ping. Comment Response 18. The Navy is willing to adopt a mitigation measure of turning the system off, if a marine mammal is detected within the 180 dB sound field. Id.

NMFS reduces the impact even the Navy is willing to admit by stating in the above quote that “serious injury is unlikely to occur unless a marine mammal is well within the 180 dB SURTASS LFA sonar safety zone and close to the source.”

The NMFS' willingness to embrace the Navy's 180 dB injury level as dispositive of the question on injury levels in general flies in the face of current research uncertainties. For example, the SACLANTCEN report contains the following:

Currently there are insufficient data to accurately determine TTS [Temporary Threshold Shift] or PTS [Permanent Threshold Shift] exposure guidelines for any

marine mammal. Why is the probability of acoustic trauma even debatable in marine mammals and why can we not simply co-opt TTS and PTS findings from land mammals? As the preceding paragraphs outlined, there are significant structural and functional auditory differences between aquatic and land mammal ears which preclude simple extrapolation of trauma mechanisms and damage criteria between groups. At present there are no studies that provide reliable threshold shift data for any marine mammal species, and there continue to be a wide range of arguments presented about acoustic trauma susceptibilities for marine mammals.

SACLANTCEN at 2-66 (emphasis added).

The very limited research conducted by the Navy cannot be used as a basis for concluding the uncertainties no longer exist and that the Navy's 180 dB is a safe level of exposure for marine mammals. Given that the scientists conducting the research for the Navy did not exceed 150 dB received levels and specifically denied that their research could be extrapolated to higher levels, see Section - - above, the NMFS position is even more untenable.

In analyzing the Grecian event and the SACLANTCEN report, marine biologist Ken Balcomb stated:

This sonar impact at received levels well below 180 dB is likewise well documented in the Greek incident reported in the NATO report SACLANTCEN M-133 (Annex G). The first whale to strand did so 40 km from the ship one hour after the acoustic trial commenced. If one takes into account how fast a beaked whale can swim (about 15 km per hour, maximum), it must have been at least 25 km from the ship when the first of its 238 four-second pings was transmitted! At that distance the RL was calculated by the Navy (NATO, Annex G) to be approximately 150 dB !

As part of the NATO LFA research, a low frequency source broadcast at 600 Hz with a source level of 228 dB. The research found received levels between 150 and 160 dB at a distance of 50 kilometers from the source. SACLANTCEN Section 2-8 at 4.

In light of the Balcomb analysis and the SACLANTCEN research findings, we can reasonably conclude that injury to beaked whales can take place at levels in the 150dB range and that such levels can be received at distances far greater than the 1 km safe zone claimed by the Navy.

The entire Balcomb analysis is in the record of the public hearing held in Honolulu, Hawaii. That analysis urges the Navy to refocus their attention on resonance impacts, not just sound pressure level impacts.

The Navy's adoption of a 180 dB sound pressure level as safe for all marine species is a leap unsupported by the existing science and contradicted by the analysis of actual events. NMFS should not join the Navy's exercise in what amounts to a blunt force effort to impose upon the scientific community a standard that permits the Navy to proceed with its activities whether that standard is scientifically credible or not.

Had NMFS not been so anxious to dismiss the Grecian event as not providing any evidence of a connection between LFA and strandings, NMFS might well have conducted the same research and reached the same conclusions as Mr. Balcomb.

4.1.6.4 Failure to Respond to the Bahamas Killings

The March 26, 2001 NOAA Fisheries status report on the March 2000 strandings and deaths of cetaceans in the Bahamas contains the following statement:

"The team has reached no final conclusions. The pattern of stranding suggests that only a source of intense pressure or acoustic energy moving from south to north through the Northwest Providence Channel could have been responsible. No source fitting this description other than Navy sonar has yet been found. Individual strandings coincided closely in time and space with the passage of Navy ships. The team believes it is highly likely that sonars were linked to this stranding."

Given this preliminary finding that the mid-range sonar now in use by the Navy caused the strandings and deaths of numerous cetaceans, there are certain questions that come to mind:

(1) Did the Navy ever apply for letters of authorization under the Marine Mammal Protection Act or permits under the Endangered Species Act for takes incidental to deployment of the mid-range sonars, such as those used in the Bahamas incident?

(2) Did the Navy ever prepare an environmental assessment for the deployment of these mid-range sonars?

(3) If the Navy prepared an environmental assessment, did that assessment conclude that an environmental impact statement was not necessary?

(4) Given the dead cetaceans and the "highly likely" conclusion by the Bahamas investigative team, is the National Marine Fisheries Service moving to require that the Navy apply for letters of authorization under the Marine Mammal Protection Act and permits under the Endangered Species Act for deployment of the sonars in question?

(5) Given that any mitigation measures the Navy adopted to minimize environmental impacts of their mid-range sonar failed spectacularly in the Bahamas, is NMFS moving to require the Navy to enter formal consultations with NMFS regarding continued use of these sonars and an EIS for such use?

(6) If NOAA Fisheries is not moving to require such applications, consultations, or an EIS, why not?

(7) If the Navy does not understand the environmental impacts of a system already deployed extensively, why should NOAA Fisheries have any confidence that the Navy understands the environmental impacts of a new system using a unique technology?

I hope that NOAA Fisheries will see fit to answer all of these questions in the very near future. The continued failure of NOAA Fisheries to take any enforcement action or to make any substantive regulatory response to the Bahamian slaughter is apparent regulatory malfeasance.

In a recent 60 Minutes II program, the Secretary of the Navy denied that the Navy had any knowledge of beaked whales being present in the Bahamas. I trust that a copy of this program is in the record of this docket. If not, I can arrange for a copy to be made available to NMFS.

The SACLANTEN report notes photo-identification studies of beaked whales in the Bahamas as one of two such studies of this rarely seen species. SACLANTCEN at 2-12. The U.S. Navy participated in the preparation of this report and specifically referenced the report in the OEIS/EIS. OEIS/EIS at 3.2-46. The SACLANTCEN report came out well before the strandings of beaked whales in the Bahamas.

For the Navy to claim no knowledge of beaked whales in the Bahamas is either a major research failure or a lack of candor.

4.6.1.5 Redefining Relevance

One manifestation of NMFS denial is the attempt to limit what will be considered relevant information.

At the NMFS public hearing in Honolulu, hearing officer Kenneth Hollingshead stated at the beginning of the session that testimony on human injury would not be germane to the hearing because NMFS is limited to considering marine mammals. Undoubtedly Mr. Hollingshead knew that human injury during the 1998 SURTASS LFA testing off Hawai'i is a major concern in our islands and inappropriately sought to prevent testimony on that subject for public relations reasons.¹¹

Humans in the water can certainly be considered marine mammals. Or NMFS can certainly consider that injury to humans is germane to injury to other mammals that happen to live in the water.

The OEIS/EIS considers human injury to be germane to the question of injury to marine mammals. See e.g. EIS at 1-24 (extrapolation from human hearing thresholds and problematic exposure levels to marine mammals).

That Mr. Hollingshead would attempt to prevent testimony on a subject that even the OEIS/EIS grants is germane is one measure of NMFS objectivity.

When a comment suggests that NMFS should require the Navy to consider the cumulative impact caused by other nations deploying LFA systems, NMFS responds that NMFS believes that the Navy should consider cumulative impacts in the OEIS/EIS and that NMFS is only required to evaluate the Navy request as deployment of SURTASS LFA affects marine mammals. Comment Response 2 1

The NMFS response seems to imply that other nations using the technology is somehow irrelevant to the NMFS assessment of potential SURTASS LFA impacts.

The OEIS/EIS discussion of cumulative impacts does not even mention other nations deploying LFA systems. OEIS/EIS at 4.4-1 to 4.4-5. NMFS could take note of this oversight as a violation of the NEPA requirement that NMFS believes the Navy should obey. NMFS could go further and find that the failure to adequately address cumulative impacts is a deficiency in the OEIS/EIS that requires correction before NMFS can make any determination on this application.

4.1.6.6 Who ya gonna call?

For all the puffery about mitigation, restrictions, and prohibitions, the question remains as to how these limitations will be monitored and who, if anyone, is going to enforce any of these conditions.

The lengthy complicity of NMFS in illegal Navy development of SURTASS LFA is hardly a confidence builder.

The current willingness of NMFS to waive the mitigation requirements when inconvenient to Navy training and look the other way in case of threat or warfare conditions continues the erosion of confidence in regulatory vigor.

Certainly the Navy took no steps to investigate the strandings of beaked whales on the Grecian coast and adamantly denied responsibility for the Bahamian killing until an independent observer tied the passing naval fleet to the event.

¹¹ Indeed a statement at the hearing about the injury to Ms. Reid produced a story in the Honolulu Advertiser in which Mr. Joe Johnson responded by essentially claiming that Ms. Reid made up her story because she is an activist against LFA. See Section 3.4.6.1.

Neither the Navy nor the NMFS saw fit to order suspension of the Hawaiian testing when numerous observers reported the whales leaving the test area, despite a permit condition calling for immediate suspension if an abnormal absence of animals occurred. Similarly, the Navy and NMFS **refused** to suspend testing when the Ocean Mammal Institute filed its report on the baby humpback whale separated **from** its mother and demonstrating distress behaviors.

The Navy/NMFS team seems wedded to each other and to deployment.

Under these circumstances, there is little reason to have any confidence that the mitigation measures and the rest are more than window dressing. As Jim Hightower, former Texas Agriculture Commissioner, would say: "It's sort of like putting earrings on a hog."

There is also the very real question as to what, if any, enforcement actions NMFS will take if the Navy self-monitoring actually reports violation of mitigation commitments or impacts during employment of SURTASS LFA that are more serious than the Navy portrayed in making their application.

Could such enforcement action realistically be expected to include revocation of the Letter of Authorization?

Would the Navy then be expected to cease deployment of the system?

Would NMFS take enforcement action to stop deployment, if the Navy insisted on continued deployment?

Given the regulatory history surrounding SURTASS LFA, NMFS appears to be little more than a department of the Navy whose purpose is to give a thin film of legitimacy to an undertaking that falls outside the law.

The rejection of the Navy's application is an opportunity for NMFS to change that perception.

4.1.6.7 NMFS and the Burden of History

Besides its complicity during the outlaw years, see Sections 2.0 and 4.1.1, NMFS bears the burden of a previous history of conflicting interests.

NMFS has a particular responsibility to carefully evaluate the adequacy of the 1 in this instance because NMFS personnel participated in the preparation of this document. Both Kenneth Hollingshead and Roger Gentry appear on page 14-1 of the OEIS/EIS in the list of people preparing the OEIS/EIS.

On page 10-174 in Comment 14.1-1, the OEIS/EIS takes the position that the participation of Hollingshead and Gentry was appropriate because NMFS was a cooperating agency and the role of NMFS personnel was "limited to review and comment . . ." NMFS takes a similar position in Comment 45 in the Comments and Responses section of the proposed rule.

The OEIS/EIS on page 14-1 provides a List of Preparers and Reviewers. (14-1). The only federal agency appearing on that list, other than the Department of the Navy, is NMFS. The EPA, U.S. Fish and Wildlife Service, the National Ocean Service, and the Marine Mammal Commission also appear as agencies invited to participate as cooperating agencies. They do not appear on the List of Preparers and Reviewers.

The List of Preparers and Reviewers specifically identifies those who served as reviewers. The designation of reviewer does not appear after either Mr. Hollingshead or Mr. Gentry. It is reasonable to conclude that Mr. Hollingshead and Mr. Gentry helped prepare the document

The past history of nonfeasance and the current history of conflicting interest place a very high burden on NMFS to demonstrate objectivity in their evaluation of the adequacy of the OEIS/EIS. When the flaws are obvious, as in the OEIS/EIS submitted by the Navy, the refusal to acknowledge those flaws would be simple proof of conflicting interests at work.

5.0 Conclusion

Given the breadth of potential impacts on the ocean environment, the deployment of SURTASS LFA may give new meaning to the old description of warfare that "they made a desert and called it peace."

The OEIS/EIS written to justify this action is a masterful piece of misdirection, obfuscation, and even deception requiring private citizens to spend interminable hours determining what is actually being said.

Once the reality of the OEIS/EIS becomes apparent, the proposed action becomes even more questionable. If the proposal cannot stand up to objective scrutiny and requires a sophisticated example of blowing smoke to attempt to escape such scrutiny, the proposal sinks itself

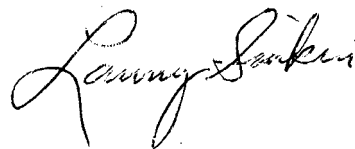
The attack on Pearl Harbor left the United States Navy with a residual fear of surprise attack. One means of avoiding such an attack is to know the location of potentially hostile forces at all times. This goal may be one of the driving forces behind the development and deployment of SURTASS LFA.

Of course, omniscience is not really possible. A small boat can deliver an explosive device blowing a hole in a U.S. Navy ship. Even with the use of sonar and visual inspection of the surface, a U.S. Navy submarine can surface rapidly into a collision with another ship and sink that ship. An error in calculation can lead to a U.S. Navy airplane bombing and killing friendly forces. Navy sonars can inadvertently destroy an entire population of beaked whales. All of these events took place in the last year.

Such events call for greater humility on the part of the Navy. There is little evidence of such humility to be found in any of the Navy presentations on SURTASS LFA.

These comments are the result of numerous hours spent deciphering the OEIS/EIS. Given the NMFS unwillingness to permit more time for such work, these comments by no means exhaust the criticisms that could be made of this document. Nor do these comments exhaust the criticisms that could be made of the NMFS proposed rule.

Dated: May 31, 2001
Hilo, Hawai'i



APPENDIX A

INFORMATION PAPER -SURTASS LFA Sonar Office of the Assistant Secretary of the Navy (Installations & Environment)

BACKGROUND.

Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar is a new sonar system that is necessary to respond to the escalating threat of modern, quiet submarines being acquired and operated by potential opponents around the world. Recognizing that the world's submarine **fleet** is becoming increasingly quieter and harder to detect with passive sensors, LFA provides improved detection capabilities, thereby sustaining the Navy's antisubmarine warfare (**ASW**) mission and maximizing the opportunity for U.S. forces to safely react to and defend against potential submarine threats. The Navy completed the SURTASS LFA Sonar Final Environmental Impact Statement (FEIS) in January 2001 and is currently working with NOAA Fisheries (formerly NMFS), to obtain a Letter of Authorization for the incidental effects that LF A may have on marine mammals. If the Letter of Authorization (**LOA**) is issued, the Navy anticipates issuing a Record of Decision in the fall of 2001 to deploy LFA from USNS *Impeccable* (**T-AGOS 23**) and RJV *Cory Chouest*,

SURTASS LFA sonar is a long-range, low frequency (LF) underwater sonar system, with both active and passive components, whose purpose is to detect quiet submarines at long distances. The extended detection range is achieved using low frequency transmitters (100 to 500 Hz) and high-gain receivers.

Since 1995, the Navy has been preparing an **EIS** under the National Environmental Policy Act (**NEPA**) for deployment of the SURTASS LFA sonar system. Based on the analysis in the Final EIS (FEIS), it was determined that Navy would request a Letter of Authorization from NOAA Fisheries, under the Marine Mammal Protection Act (MMPA).

DISCUSSION

There is an immediate and fundamental national security need for SURTASS LFA ~ the detection and tracking of quieter, more sophisticated foreign submarines that present a threat to the national security of the United States. Currently there are 21 countries operating submarines in areas of significant strategic interest to the U.S. Of the approximately 500 non-U.S. submarines in the world, 224 submarines are operated by non-allied nations. Many of these 224 submarines are the more advanced, quieter submarines that present a threat to U.S. forces operating in areas of strategic interest. To meet this potential threat, the Navy spent years investigating both non-acoustic and acoustic technologies to enhance current Anti-Submarine Warfare (**ASW**) capabilities. *SURTASS LFA proved to be the only system capable of providing reliable and dependable long-range detection.*

In 1997, the Chief of Naval Operations initiated a Scientific Research Program (SRP) to conduct field research into the effects of low frequency (LF) sound on marine mammals and human divers. These studies were designed to identify high-risk areas associated with SURTASS LFA sonar employment and to analyze the potential impacts of LF sound on marine mammals and human divers. The \$10M at-sea marine mammals research effort, conducted independently by world renowned marine biologists and bio-acousticians, collected data on marine mammals considered to be most susceptible to LF sounds (baleen whales). Specifically, the scientific goal was to ascertain whether marine mammals exposed to LFA signals would exhibit biologically

significant behavioral changes. Based on the results of the field studies, it was determined that if the LFA sonar system is operated in accordance with the restrictions and mitigation proposed in the EIS, the potential for significant impact to marine animals would be negligible within the meaning of the Marine Mammal Protection Act (MMPA). NOAA Fisheries, a cooperating agency with the Navy and the federal administrator of the MMPA, concurred with this conclusion during the EIS process. Six public meetings and three formal public hearings were held to provide information and receive public comment on the Draft EIS (DEIS). Additionally, the public was given 90 days to comment on the DEIS; these comments, and responses to them, were incorporated into the FEIS.

Currently, NOAA Fisheries is determining whether the Navy should be granted a Letter of Authorization allowing for limited "taking" of marine mammals, largely associated with harassment" of marine mammals, within the standards governing the MMPA.

Much of the concern and controversy over the Navy's SURTASS LFA sonar system stems from lack of information and misleading information which has appeared in the press, in direct mail and on the Internet, or been presented at public hearings.

Following are Questions and Answers that address much of the misleading information) concerning the SURTASS LFA sonar system.

- Question: Will sounds produced by SURTASS LFA impact the oceans on a global scale?

Response: The SURTASS LFA sound, which is approximately 215 decibels (dB) at the source, can be detected at long ranges mainly due to the underwater propagation of low frequency sounds. But the intensity of low frequency sound decreases rapidly as the distance from the transmitter increases. The most significant decrease in sound intensity, a loss of 60 dB, occurs within the first one thousand yards (approximately one half mile). Also, the fact that a low frequency sound is detectable at long distances does not mean that it has a significant biological impact. While the proposed action for the SURTASS LFA EIS is the deployment (use) of up to four ships, two in the Pacific/Indian Ocean area and two in the Atlantic/Mediterranean area, rarely will there be more than two ships at sea at any one time. Even in the highly unlikely event that four ships were deployed at the same time in different oceans, it would be physically impossible for them to impact the oceans on a global scale. When operating, each ship covers a limited area, traveling at only 3 knots. Additionally, the LFA sonar system emits sounds during a maximum of 20% of its operating time. Given ship deployment schedules, maintenance requirements, and operational cycle limitations, active transmission times for each ship would not exceed 432 hours per year. This is less than 5% of the total hours in a year available for LFA operation. This minimal amount of operational time is necessary to ensure operators would be proficient in SURTASS LFA sonar at-sea operations in time of crisis.

- Question: Is it true that LFA will generate sound in the range of 235 dB, which could cause hearing loss, serious injury, or even death to whales and other marine mammals near an LFA transmitter?

Response: LFA does not produce 235 dB of actual source level. As noted earlier, the system operates at a 215 dB maximum measurable source level. The intensity of low frequency sound decreases rapidly as the distance from the transmitter increases. The most significant decrease in sound intensity, a loss of 60 dB, occurs within the first one thousand yards (approximately one

half mile). For whales and other marine animals, the most important metric is the sound level at which they receive sound from LFA sonar system, not the level at which LFA is transmitting. Because the sound level drops off quickly as the distance from the LFA array increases, animals would have to be very close to the transmitter to receive sound levels that could cause physical damage. The working consensus among top experts in the marine mammal acoustics and hearing field is that some physical harm could occur at received levels above 180 **dB**. To reduce the possibility that marine mammals might be exposed to sound levels greater than 180 **dB**, the Navy has worked with scientists to develop a mitigation plan that will be employed whenever the LFA system is used.

This mitigation plan is intended to detect animals within a range of approximately 1,000 yards of the SURTASS-LFA vessel. This greatly reduces the chances **that** any animal would experience LFA received levels greater than 180 **dB**. The mitigation measures include: (1) Visual monitoring - daytime observations for marine mammals and other protected species, such as sea turtles, from the vessel by personnel trained in detecting and identifying these species; (2) Passive acoustic monitoring - the SURTASS towed horizontal line array (the passive or "listening" part of the system) will be used whenever the LFA sonar is transmitting to detect vocalizing marine mammals; and (3) Use of a high frequency (**HF**) active sonar - operating like a "fish finder," this HF sonar will be slowly "ramped up" to allow any marine life to swim clear and help detect marine mammals that are within 1,000 meters of the LFA transmitters prior to and during periods when the LFA system is operating.

- Question: Is it true that the SRP was not a representative scientific study of the impact of LFA **sound** levels on marine mammals because the sound levels of testing were below those of actual planned system *use*, only four species were studied, and the program did not study impacts from received levels between 150 to 180 **dB**?

Response: The SRP was a field study independently designed by world-renowned marine biologists and **bio-acousticians** to identify the potential impacts of high LF sound levels on biologically important behaviors of marine mammals. The marine biologists and **bio-acousticians** independently conducted this integrated, at-sea research effort. The results of the SRP revealed that the studied species of whales did react to LFA sounds, but the responses were short term and only covered activities within a few miles of the LFA sound transmission. The SRP revealed no evidence of long-term impact to significant biological behaviors.

Regarding the sound levels used for the SRP, in some of the SRP Phase 1 experiments (studying the responses of feeding blue and fin whales), the SURTASS LFA source was transmitting at operational power levels. Even under these circumstances very few animals were exposed at received levels as high as 155 **dB**. The research results confirmed what was predicted from acoustic modeling **performed** in the FE 1 S - that a very small percentage of animals would be close enough to the SURTASS LFA sonar to experience levels above 155 **dB**. For the most part, various phases of the SRP were specifically designed to NOT expose animals to higher received levels. The Navy did not seek a scientific research permit to **perform** field tests at higher received levels to animals in the wild because injury to marine mammals cannot be studied in the wild. Experiments involving injury to marine mammals should be undertaken under controlled laboratory conditions. Moreover, the Navy believes it has adequate data to assess what the potential for impacts would be for received levels greater than 155-180 **dB** from SURTASS LFA sonar without the need to try to actually expose animals to these levels.

Regarding the number of species chosen for the SRI?, it is impossible to conduct studies on the impacts of LFA sounds on all marine animal species due to the large number of species, the inability to locate and track certain species, and the general lack of knowledge regarding the behavior of some marine animals. Accordingly, four Mysticete species of whales (blue, fin, gray, and humpback whales) were selected for study because: (1) They are considered to have the best hearing in the SURTASS LFA sonar frequency band of all marine mammals, (2) These species have the protected status under the law, and (3) There is prior evidence of some avoidance responses to LF sounds. The responses of the representative species to LF sound signals during the SRP were designed to serve as indicators for responses of other potentially LF-sensitive species, which were presumed to be less vulnerable to SURTASS LFA sonar signals.

The analysis associated with SRP experiments did not extrapolate from 150 dB to 180 dB. The selection of the 180 dB criterion for the onset of potential injury to marine mammals from SURTASS LFA sonar was not related to or extrapolated from the results of the SRP. Several scientific and technical workshops and meetings at which the 180-dB criterion were developed are: (1) The High Energy Seismic Survey (HESS) Team Workshop (June 12-13, 1997), (2) the Office of Naval Research Workshop on the Effects of Anthropogenic Noise on the Marine Environment (February 10-12, 1998), and (3) the National Marine Fisheries Service (Office of Protected Resources) Workshop On Acoustic Criteria (September 9-12, 1998).

The Navy accepts that risk to marine mammals of a significant change in a biologically important behavior is high at a 180-dB received level and assumes that this same risk is low below 150 dB received level (RL) because of the relatively modest responses observed during the SRP. The Navy acknowledges that there are no SRP data concerning the possible responses of representative cetaceans to LF sound above 155 dB. However, the risk continuum model utilized in the FEIS specifically addresses the potential for risk between 155 and 180 dB RL, and uses a very conservative methodology. The results of the FEIS acoustic analysis demonstrate that a very small portion of the modeled animals experienced LFA received levels exceeding 155 dB.

- Question: Are there potential long-term impacts from the Navy's SURTASS LFA sonar system that could affect the behavior and viability of entire populations of marine mammals and will push endangered species into extinction?

Response: The Navy is fully cognizant of and sensitive to its responsibilities under the MMPA and the Endangered Species Act (ESA) regarding long-term impacts of LFA sonar operation on marine mammals and endangered species. The Navy has worked actively with NOAA Fisheries throughout the NEPA process to determine impacts to marine mammals and threatened/endangered species. Currently NOAA Fisheries is involved in the administrative rule making process for issuance of an LOA for SURTASS LFA employment and is preparing a Biological Opinion (BO) to determine the impacts of SURTASS LFA operations on threatened/endangered species. The SURTASS LFA program is working hard to live up to its responsibilities for national defense while also working to ensure that environmental impacts are understood, evaluated, and mitigated. This has been a major part of the motivation for supporting scientific research on the issue of marine mammals and man-made sounds.

The SRP research results discussed the question of what level of behavioral response could result in a population-level impact and therefore threaten the survival of a species. Navy's plans for SURTASS LFA sonar operation preclude such scenarios. The Navy has explicitly stated that it will not operate SURTASS LFA sonar in locations that are known or suspected to be biologically

important areas for marine animals during the times of biologically important activities, such as migration corridors, breeding and calving grounds, and feeding grounds. This operational restriction, coupled with monitoring, leads to the conclusion, based on scientific findings and supported by independent marine biologists, that the potential impact from SURTASS LFA sonar on any stock of marine mammals from injury is negligible, and any effect on the stock of any marine mammal from significant change in a biologically important behavior is considered minimal. The analysis also concluded, with the concurrence of experts in the field of underwater sound effects on fish and sea turtles, that potential effects of SURTASS LFA sonar operations on fish, including sharks, and sea turtles would not be significant.

- **Question:** During Phase II of the SRP gray whales swerved from their migration paths. The louder the sounds the more the whales deviated from their path. What is the significance of this information?

Response: It is true that during Phase II of the SRP, gray whales tended to avoid coming close to the LFA sound when it was centered in their migratory pathway, and that the amount of avoidance when the LFA source was near shore (1 nautical mile offshore) was proportional to its loudness. The migrating gray whales showed the same response, however, when random noise was transmitted, indicating that it is not the LFA sound in particular that they avoided, but rather the presence of sound. Of particular interest was the surprising result that there was little or no avoidance response to the LFA sound when the source was placed 2 nautical miles offshore (but not in the migratory pathway) with the whales receiving the same sound levels as they had when it was 1 nautical mile offshore. It should be noted that SURTASS LFA sonar would be operated outside of 12 nautical miles from any coastline.

- **Question:** Is it true that during Phase III of the SRP conducted off Hawaii, whale-watch boat captains reported humpback whales disappearing from the testing area as soon as the broadcast began?

Response: There is no scientific data to support this claim. Typically, humpback whales are seen in the warm waters of Hawaii from November through mid-April and are easiest to encounter in December, January, and February. Their departure begins in early March, few are seen in April, and males leave earlier than females and their recent offspring. For a variety of reasons, the Hawaii research phase was delayed, and the studies (which focused on offshore singers) commenced in early March, late in the whale season. Thus, the decrease in humpback numbers in March during the LFA research is entirely in keeping with the typical departure schedule for the humpbacks.

- **Question:** Will SURTASS LFA harm human divers?

Response: The Navy has conducted a comprehensive and thorough scientifically based research program on the potential effects of low frequency (LF) sound on human divers. Medical doctors and clinical researchers have carried out extensive computer modeling and testing of human and animal subjects. (All testing was done within the guidelines for the protection of human subjects and standard ethical procedures for animal experiments. The study concluded that the maximum tested sound level of 157 dB did not cause damage to internal or external tissues, or the vital bodily functions and processes in human subjects.

Based on the data obtained from these studies, the Navy **Bureau** of Medicine incorporated a wide safety margin and established a very conservative limit of 145 **dB** for LF receive sound level for recreational and commercial divers. The mitigation measures proposed in the EIS will ensure that no diver will be exposed to levels of sound above 145 **dB**.

- Question: There is evidence that sonars have harmed marine mammals (strandings in Greece in 1996 and in the Bahamas in 2000). Will SUR T ASS LFA sonar also harm marine mammals?

Response: Despite the continued attempt to relate SURTASS LFA sonar with these stranding events, this system has not been involved in any marine mammal strandings, injuries, and certainly not any deaths. The SURTASS LFA SRP has focused on the issue of the potential for LF sound impacts on all marine animals, including beaked whales. Moreover, the SRP systematically evaluated the animals with the greatest potential to be affected by LF sound. Current evidence would suggest that while beaked whales may be sensitive to frequencies above SURTASS LFA sonar, there is little evidence that they are more sensitive to LFA sounds than the species selected as subjects for the SRI?. Thus, even if the investigations of the above stranding events ultimately concludes that mid-frequency sonar caused or contributed to the strandings, such a conclusion would not appear to present any significant new information relevant to the proposed deployment of SURTASS LFA sonar. NOAA Fisheries has stated that because of its offshore operations, the relatively small area where marine mammals **might** be harmed, and the visual, passive, and active acoustic monitoring that will be employed, it is very unlikely that there would be any strandings associated with SURTASS LFA sonar operations. If any do occur, NOAA Fisheries will coordinate with the U.S. stranding networks along whichever coast(s) SURTASS LFA sonar is operating to ensure that strandings will be thoroughly investigated.

- Question: Is there any basis for the claim that SURTASS LFA sonar can cause injuries associated with resonance phenomena?

Response: The possibility of resonance phenomena and injury to marine mammals, raised by some individuals, are not supported by physiological research on the impacts of LF sound on lungs and other tissues of mammals conducted by the Naval Submarine Medical Research Laboratory. Additionally, ongoing research by Dr. Ketten of the Woods Hole Oceanographic Institution, a leading researcher on the marine mammal acoustics, indicates the resonance phenomenon is not an issue for SURTASS LFA sonar.

CONCLUSION

The Navy recognizes that the potential impact of man-made sound in the ocean is an issue of much public and scientific concern. The Navy also has a vested interest in the conservation of the ocean habitat, and its efforts are directed toward that goal. The environmentally responsible deployment of the SURTASS LFA sonar system is an important Navy priority.

The Final EIS supports a position that SURTASS LFA sonar can be operated safely relative to both human and marine life by restricting where and when it operates and by utilizing validated mitigation measures. The Navy has made every effort to maximize public opportunity to review the program and will continue to do so.

APPENDIX B

Joe Johnson Editorial

Honolulu Advertiser, "Island Voices" May 11, 2001

Navy's Sonar Program Is Safe

Respected independent scientists have found that low-frequency active sonar does not injure the environment.

by Joseph S. Johnson

(Joseph S. Johnson is the Navy's LFA environmental impact statement program manager.)

The Navy can safely and effectively manage low-frequency active sonar without hurting the environment, top marine biologists say.

There is an immediate and fundamental national security need for this LFA sonar: the detection and tracking of quieter, more sophisticated foreign submarines that may threaten national security.

Currently there are 224 submarines operated by non-allied nations and approximately 500 non-U.S. submarines worldwide. LFA is the only system capable of providing reliable and dependable long-range detection.

Because marine animals can also hear low-frequency sound over long ranges and because there was little information available in 1995 to estimate how marine mammals would react to LFA signals, the Navy commissioned a study by a team of distinguished marine biologists and bio-acousticians. This effort involved complex data collection with the marine mammals considered to be most susceptible to low-frequency sound: baleen whales.

Specifically, the scientific goal was to determine whether marine mammals exposed to LFA signals would exhibit biologically significant behavioral responses. The blue, fin, gray and humpback whales studied were selected as indicator species and used scientifically to extrapolate the results to other species of lower low-frequency sensitivity.

Contrary to accusations made recently in these pages, LFA sonar has not been involved in any marine mammal strandings or injuries, and certainly not any deaths. Specifically:

Allegations regarding incidents in Greece and the Bahamas implicate mid-frequency sonars and not LFA. In fact, during those periods, the only LFA sonar ship was in the Pacific Ocean conducting passive-only operations.

Whales did not leave the area prior to their normal departure period. This was validated by aerial surveys from the University of Hawai'i.

A scientific team conducting research off the Big Island did investigate allegations of abnormal marine mammal behavior and an injury to a snorkeler. The local National Marine Fisheries Service representative and a UH scientist also assisted the Navy team. The reported diver injury is contradictory to medial evidence developed during a **four**-year diver research program.

The reported LFA signal is similar in exposure level and sound to the songs produced from nearby male humpback whales. To our knowledge, no one has ever been injured from exposure to a humpback whale song, regardless of the proximity or level.

Several other anti-LFA proponents also claimed to be injured by emissions from LFA on March 8, 1998. Interesting, because the LFA system was not transmitting that day.

The Navy recognizes that the potential impact of man-made sound in the ocean is of public and scientific concern. The Navy cares about the ocean habitat, and its efforts are directed toward that goal. The environmentally responsible deployment of the LFA sonar system is an important Navy priority.

The final environmental impact statement supports a position that LFA sonar can be operated safely relative to both human and marine life by restricting where and when it operates and by using validated mitigation measures.

The Navy has relied on a group of independent scientists from respected institutions such as Woods Hole Oceanographic Institution and Cornell University. These are internationally recognized experts in bio-acoustics and animal behavior. Their reputations are based on many years of impeccable research and personal scientific integrity. They are truly interested in scientific fact, not emotional clamor.

The facts demonstrate that LFA sonar can be safely used in our oceans.

===== End of Joe Johnson Editorial =====

Response to Joe Johnson Editorial

Apparently the Navy correctly perceives that scientific and public opposition to the deployment of this system is escalating rapidly. In response, Mr. Johnson resorts to outright false statements and disinformation to defend the system.

For example, Mr. Johnson states: "Allegations regarding incidents in Greece and the Bahamas implicate mid-frequency sonars and not LFA."

The Grecian incident referred to is the stranding and deaths of numerous whales at the same time as a NATO sonar exercise. The NATO investigative report states that the

sonars broadcasting off Greece sent out signals at 600 Hertz. Everyone, even Mr. Johnson, agrees that signals below 1000 Hertz are considered low frequency signals. The NATO report contains extensive discussion about LFA, including one chapter provided by the U.S. Navy's chief researcher into LFA. Obviously the Grecian killings implicate LFA. Mr. Johnson's statement is knowingly false.

Mr. Johnson further states that during the period of whale killings in Greece, "the only LFA sonar ship was in the Pacific Ocean conducting passive-only operations." Again, everyone acknowledges that the NATO ship used low frequency active sonar. The particular system was not the U.S. Navy's system stationed at Pearl Harbor. That system is not the only system in the world. Mr. Johnson's misdirection is deliberate.

Mr. Johnson claims that whales did not leave the testing area off Hawai'i during the 1998 LFA testing. He states that the presence of whales in the testing area was "validated by aerial surveys conducted by a research scientist from the University of Hawaii." The scientist is Dr. Joseph Mobley. His surveys could not validate the presence of whales in the testing area during the testing because his surveys did not include the testing area. I know that omission to be true because I pointed out to Dr. Mobley that his surveys showed no whales in the testing area after the testing began. He responded by providing me with the random grid lines showing no flights over the testing area.

Mr. Johnson's disinformation campaign continues with his claim that the scientific team conducting the Navy's LFA research off Hawaii "did investigate" the claim of "injury to a snorkeler" from an LFA broadcast. He further claims that "the local National Marine Fisheries Service representative and a UH scientist also assisted the Navy team."

Once again, Mr. Johnson fabricates reality. Naturalist Chris Reid is the injured snorkeler. At no time after Ms. Reid's reported injury did anyone from the Navy, the scientific team, the National Marine Fisheries Service, or UH contact Ms. Reid for an interview, a physical examination, or any other information that could qualify as an investigation of her injury.

As far as the so-called environmental impact statement prepared by the Navy, this document belongs in the category of propaganda.

Mr. Johnson has no shame or he would never have engaged in such deliberate deceptions. Nevertheless, the appropriate response to his editorial is "Shame on you, Mr. Johnson."